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JOINT VENTURE

By DICK GEORGESON

The following article describes an attempt to break the current world distance record (1,041.52 km.). In New Zealand, under known methods of soaring, the total distance available is approx. 1,255 km. On the 17th November last Dick Georgeson and Gerald Westenra declared a goal 1,126 km. away. They did not make it . . . but they were airborne for about 11 hours and had to use oxygen for 8 hours on this wave flight. This is how they set about it.

SINCE commencing gliding operations in New Zealand the possibility of going from the south of South Island to Hicks Bay, in the north of North Island, has been an intriguing thought. This year, Maurice Wills and the Southland Gliding Club offered to lay on facilities for such an attempt, and as activities were slack in the business world, Gerald Westenra and I decided to take a holiday and have a go between the 24th October and 23rd November.

The starting point of this flight, we realised, was going to be critical, as if we were too far west we would be under rain. The first site was laid on at Black Mount, at the southern end of the Takatimus. Ron Hazlett, ex-wartime pilot and pioneer of gliding in Southland, took Gerald and me under his wing and established us at the proposed site. This was perfect in every respect from the amenities angle, but, after some very pleasant local flying over Manapouri and Monowai, we were forced to abandon it, not because of the rain, but because of something we had not considered, turbulence. This was discovered in a dramatic manner.

A possible day arrived and we were to make an attempt. Maurice towed Gerald into the air in his Dart 17 at about 7 one morning. I was strapped in the cockpit ready to take-off. I watched, with some alarm and despondency, the tow, which for me and my newly acquired SHK, looked unacceptable. When Maurice landed and offered me a tow, I hurriedly declined and was pushed back into the shelter of the trees. We watched Gerald manoeuvre into position for landing. It was alarming to look at. He suddenly dropped about 150 ft. and to the onlookers on the ground, it appeared as though the aircraft would be unable to stop before hitting the ground. At the last moment the wings took the load and bent upwards violently. Gerald pulled off a good landing. After a brief discussion with Maurice, we all agreed that the area was unsafe in norwesters. I don't think Maurice slept all that night trying to work out a new plan of attack. However, next morning telephone messages were received from Maurice — Ron Hazlett arrived and off we went to the new site 100 miles around the Takatimu's to the northern end.

AND SO IT RAINED

We said goodbye to our most hospitable hosts, station owner Jim Turnbull and his wife. That evening we were ensconced at Elmwood Station, the owner being Joe Gilland, ex-RNZAF. We camped in a hut and cooked in Ron's caravan, supported, as usual, by the Southland Gliding Club, complete with Piper and tow pilot — and so, it began to rain! We rigged our aircraft, left them out at night, only to be rained on, derigged them and put them away again, only to repeat the performance a day or so later.

We had spent a bad week at Black Mount and we spent a further ten days at Joe Gilland's. We did have, however, some south-west wave soaring and this offered lovely flying over Monowai, Manapouri and Te Anau areas and up to the Eglington Valley. On another day, in thermal, John Goddard pioneered Ron Hazlett's route through to Queenstown via the Mavora Valley, while attempting a 300-km. He did the first leg in just over an hour, only to spend four hours on the little Queenstown hill trying to get re-established. However, a front had come up the coast and blotted out the remaining two legs. Landing at Queens-

town airport, he was met by an American tourist of Mount Cook Airlines, who said, "Say, is this a Schweizer?"

Our morale at this stage was getting very low and suddenly we decided we still had not the right place from which to start. Every time the westerly blew it rained, so down country we went, collected and delivered, as usual, by Ron Hazlett. This time we settled at East Dome, the property of Alec Crouse. It was a lovely site from every aspect and for the first time optimism rose a little and we felt we might have a suitable place from which to start our attempt.

A GLIMMER OF HOPE

Listening to the weather forecast one night there seemed a faint glimmer of hope that conditions were improving. I had been having long talks with my wife, Helen, over the radio, who had been keeping in touch with the weather office from day to day. On this particular evening, when we wanted the information, a fuse blew and all I heard from Helen was that she would be away for the next two days.

The following night Gerald and I prepared for an early start. We were tired of rigging our aircraft the night before, only to have it rained on, so we decided to rig in the morning. Looking back, failure to rig the aircraft the night before may have cost us the world distance record.

Next morning we awoke early to see signs of weak lenticulars. It looked as though it was raining at Elmwood, but here it was beautifully clear. We got up, rigged and John Goddard got us breakfast. Rod Kendall and Kerry Jackson went to a great deal of trouble to get us into the cockpits, complete with our big Arctic boots, food, maps, radio beacon lent to us by CAA, etc. They read through our check list, John Goddard lined up the Piper and Gerald was off.

In spite of two pilots and three helpers, it was not until 7 a.m. that Gerald took off, over an hour later than we should have been. Half an hour later I joined Gerald.

WEAK WAVE

We both released a few miles northwest of Mossburn. It took us about an hour to assess the weather and gradually



Route of flight by Dick Georgeson and Gerald Westenra on 17 November last.

build up height in weak wave. At 0840 we were at 12,000 ft. at Garston. Conditions looked confused and poor, with a bit too much cloud about for comfort. However, at this point we decided that we should go. This country, in the lee of the Remarkables, looked inhospitable. To our surprise, and working as we had planned, as a pair, we found narrow bands of lift. At 0945 we found ourselves in the Cromwell area at 12,500 ft. We felt that the pair flying was giving us an advantage. The companionship was also wonderful and added to the enjoyment and intrigue of the flight.

On the next leg, to the Lindis Pass, we were in separate wave and probably 5-10 miles apart, but at 1010 we were at 15,800 ft. and we met almost over the Lindis. Here we were in familiar country, and the Mackenzie Basin opened out ahead of us and for the first time we saw a worthwhile lenticular.

John Trotter advised us over the radio that if we could make Omarama the Mackenzie Basin looked workable. On looking at the sky we agreed, and put our speed up and did not bother to stop for height until we reached Pukaki. Here we climbed up the lenticular and pushed out over the Tasman Valley. At 1105 we were almost 22,000 ft. up the Godley Valley north of Lake Tekapo. From there we slipped over the Two Thumbs Range into the Erewhon area. By noon we were running along the lee of the Arrowsmith Range. John Trotter had notified Air Traffic Control that we were on our way, and I believe it was in this area that we were first picked up by the Christchurch radar. It was at this stage we discovered, to our horror, that my 3481 channel was u.s.

Both Helen and Phil Howell were, unfortunately, away, so our radio help with ATC was missing in this area. However, John Trotter came to our aid, told us we were on radar and cleared through Red 1.

We were getting along much better than we had thought, although the sky gave relatively no indication of wave. Lift was still in narrow bands and quite difficult to find, but, again, one or the other managed to find wave and so avoid having to stop and search.

Hurunui showed up at 1250 and I started to look for Helen, who was jet



Dick Georgeson

boating with Bruce Gillies and John Hamilton. Suddenly, I saw the wake of two little boats. I was looking down on the river from 15,000 ft. and they were directly below me. The river looked terrible. It was in flood and it seemed to be one mass of rocks. I thought, thank God I am up here and not down there! I certainly hoped Helen was safe. (I heard afterwards the story of the Hurunui — it sounded horrifying, Bruce Gillies almost losing his boat. They had to camp and repair it before returning home.)

HALF-WAY POINT

The next note on Gerald's log states that at 1410 we were 15,000 ft. between the inland and seaward Kaikouras. Ignoring the first hour to get started, we had averaged nearly 60 miles per hour to this point. This is faster than I had averaged on my goal-and-return flights, and progress was satisfactory.

We had reached our half-way point on schedule, and with a reasonable bit of luck we hoped we could cross the Cook Straight and re-establish ourselves in the Wairarapa, in the North Island.



"With weather clearing, we once more head north between the Kaikoura ranges."

Suddenly, we noticed the ceiling coming down and, looking to the west, we could see a stream of cirrus coming across and cloud obscuring the ground. For a brief period we thought we might be able to climb over the top and at 21,000 ft. we were very nearly looking across the crest of the wave. However, lift had fallen off and, suddenly, Gerald said, "Let's get out of here!" The decision was made in the nick of time. We turned about and headed south and I pushed the speed of the SHK up to its maximum.

For a short period we wondered whether we could dive underneath the cloud and make progress to the north between the two Kaikouras. We later learnt that cloud descended well down the mountains, so thank goodness we didn't try.

A LONG WAIT

Then began a long wait of three hours in the area between Lake McRae, Dillon Cone and the head of Awatere. For three hours we went round and round and this cost us any hope of getting to our destination at Gisborne. It was a long, cold wait, which cost me some skin off my feet — I guess through mild frostbite. But Blenheim would be worth it if we could make it, as perhaps it would give us a joint NZ distance record.

Slowly the cloud began to clear from the west and we headed north once again towards Molesworth. We got glimpses of the inland Kaikouras, the tops of which had received a new fall of snow. Having been so long under the overcast, we were really cold, and were glad to be on the move again.

We had an anxious period when we were near Molesworth and lost the lift and headed downwind in between the two Kaikouras. We struck a downdraught at 2,000 ft/min. once we got in the lee of the inland Kaikoura. The country was most inhospitable in this area and I was frightened we might get below the wave area and into the turbulence before reaching the lift. However, we both sailed into the lee wave and in good lift headed north.

John Shuttleworth gave ATC our approximate position and the radar con-

firmed that they had picked us up.

At 1730 we arrived over Blenheim at 14,000 ft. At this stage Gerald's radio went out, the North Island was obscured by cloud and we felt that we had done enough for one day. I therefore said goodnight to our radio friends, John Trotter, John Shuttleworth and Des Renner, who had supported us so well throughout the day.

It was great fun on the way down meeting a Ka-6. We flew round him and then dived down, saw the Blenheim Kookaburra, gave them a friendly wave, and so landed at 1800 hours at Blenheim, to receive a tremendous welcome from Rex Handley, George Martin and Geoff Stephens, who was the man we had seen in the Ka-6, just finishing off his Silver C.

We had a final most pleasant surprise when, next morning, we found that Kerry Jackson and Rod Kendall had appointed themselves our retrieve crew and were well over half way on their 800 mile retrieve.

And so ended Gerald's and my joint venture, which, for me, was far the most enjoyable of any long flight I have ever done. The excitement and companionship of two sailplanes was really tremendous.

The distance covered was approx. 400 miles (644 km.) and, subject to homologation, will be a joint new national distance record.

SOME THOUGHTS ON FIELD LANDINGS

By JOHN DELAFIELD

THE cross-country season is almost here again, and it is this that prompts me to write this article on field landings. I do it in the hope that it will stimulate thought and discussion and thereby help us to overcome some of the risks involved.

There is no doubt that landing a glider in a field involves more risk than landing back at the club site, although I suspect this may not be true of *all* sites! Nevertheless, we recognise this risk and to help to reduce it we teach our Bronze C aspirants a basic field landing technique as part of their qualifying syllabus. However, it is uncommon for glider pilots to receive any formal training after their Bronze C and it is hardly surprising that an alarming proportion of field landing accidents occur to relatively experienced pilots.

In this article I will first consider the basic field landing technique taught to the Bronze C pilot, and then apply and modify it to suit the needs of the more advanced pilot. In particular, I will be considering the needs of the pilot who is just beginning competition flying.

Basic Technique

A field landing divides itself into four clearly defined phases:

(a) Selection of a Safe Area.
(b) Selection of a Field.
(c) The Circuit.
(d) The Approach and Landing.

The first phase, selection of a safe area, occurs when the pilot realises that he is getting low and a landing becomes a possibility. At this point he should aim for an area of countryside in which there are a number of likely landing spots. In the early cross-country flights the pilot should be making this selection at around 1,500 to 2,000 ft. *above ground level* (agl). Whilst he is flying towards the chosen area the pilot continues his search for lift until he reaches around 1,000 to 1,500 ft. agl when his concentration should be devoted to the next phase, field selection.

The points about field selection generally seem to be well understood and I will only remind ourselves of some of the main things to consider. These are: Terrain—hills and so forth. Wind direction. Field characteristics—size, surface, crop, cattle. Obstructions. By carefully considering each aspect and relating one to another a logical choice of a field can be made and we are then ready for the next phase, the circuit.

The circuit flown prior to a field landing should conform to the standard one taught at a "flat site". We teach and practise the traditional square circuit be-

cause it lends itself to field landings and requires no basic modification. I wonder how many people on early cross-countries forget this basic teaching and get themselves into awkward situations. I know I certainly did.

The final phase, the approach and landing, is obviously the most critical. However, if the earlier selection and planning phases have been sound then there should be no undue worry. The approach begins with a final turn at a safe height, around 300 ft. agl, and is flown at the calculated final approach speed. At this point the pilot should aim to achieve the usual approach angle because, by so doing, he eliminates one of the variable factors in his approach. Having achieved the desired path he should maintain it by the use of airbrake, whilst still flying at his pre-calculated final approach speed. What so often happens is the complete reverse and, in this case, the glider crosses the threshold at some excessive speed and, of course, finishes up in the prickly hawthorn hedge on the other side of the field. Most uncomfortable.

The idea of the constant angle, constant speed approach lends itself very nicely to spot landings and certainly reduces the nervous strain of a field landing. The basis of the technique is illustrated in diagram A. By flying at a constant speed the glider will maintain a roughly constant attitude. All that the pilot now has to do is to select the desired "round-out" point and then by observing the relative movement of this point in relation to the windscreen he can maintain the desired path. If the point moves "up" the windscreen the glider is undershooting and if it moves "down" it is overshooting; by normal use

CONSTANT ANGLE/CONSTANT SPEED APPROACH

Diagram A

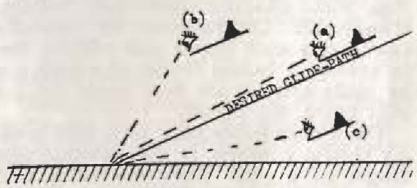


Diagram A

of airbrakes the pilot can return the glider to the desired path. This technique is, I believe, of fundamental importance to precise and consistent field landing, and by its use a pilot can avoid the inconsistent and dangerous arrival at either too low or too high a speed.

The landing itself and the ground run should be relatively straightforward if the correct technique for the approach has been used. The glider should be "held-off" and landed in the usual two-point attitude so as to achieve the lowest practical ground speed, thereby reducing the risk of damage by rough ground. After touch-down the stick should be eased back to reduce the risk of damage to the nose skid or, for that matter, to reduce the risk of a machine without such a skid tipping on to its nose as soon as the wheel brake is applied.

I will not go into the after landing actions, as these are outside the scope of this article, other than to stress the need to contact the local farmer. The future of gliding in this country depends, to quite a large extent, on the goodwill of the farming community; after all, they generally do own the land and we are really trespassers. Now that we have refreshed our memories on the basic technique for a field landing, I will go on to amplify some of the points and produce a few ideas of use to the more advanced pilot.

Advanced Techniques

The basic field selection procedure is, with only a few modifications, still valid for the advanced pilot. The only significant differences occur before the final approach and they are only in the actual decision heights used. The more experienced the pilot is the less time he needs to devote to field selection and so on. However, to my mind the one height which should not be reduced is that used for the final approach; any reduction in this area cuts into the safety margin and is particularly hazardous. Diagram B illustrates the point.

The actual decision and selection heights used will obviously vary not only with experience but with the terrain, weather conditions and so forth. However, if the approach is commenced at a sensible height then, even if the field selected is a bad one, there is every

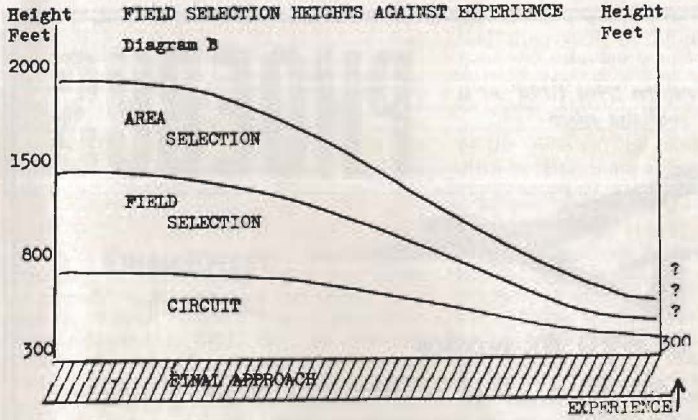


Diagram B

chance that the landing will be uneventful. Bad approaches beget bad landings. Perhaps one of the most dangerous habits is the low, slow final turn. On a windy day with a marked wind gradient this sort of flying is, literally, fatal. There have been enough accidents in this area to illustrate the risks involved and the only safe answer is to avoid doing such turns. If, however, we must turn at a low height then the moral is simple: keep the speed up to a sensible figure. Better still, plan ahead and turn in at the normal safe height!

Sometimes you hear of people gliding out for maximum range and continuing until the ground meets the glider. Whereas this is safe in some parts of the world there are few situations in this country where it can be condoned. As a rule, therefore, even when flying over a very good landing area, a pilot should still abide by the basic rule of turning in to land at a good safe height. After all, there is really no point in breaking the glider for the sake of an extra mile or so. It may pay to press on, once, twice, several times, but one day it will turn out to be very expensive.

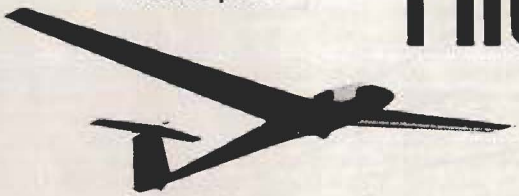
Gliding out to a low height, on an uncompleted distance task, for instance, can be made safer in certain circumstances. For example, you might calculate that from the height you have you can reach a particular airfield. This is all very well since it leaves you in the typical "final glide" situation. However, remember that not all disused airfields are safe for a landing; indeed some are positively dangerous, and also remember that you will probably be very unwelcome if you flop down on an active airfield.

As another example, I have found that during the hay cutting season it is practicable to do a form of final glide into a cut hay field. As a rule they have a pale yellow tinge and are easily recognised from the air; it is also uncommon to find serious obstructions in these fields, other than the cut hay, and they therefore offer a fairly safe landing ground. Remember, however, that if we do a final glide into such a field we are nibbling away at our safety margins. Once again, it is much better to chicken-out at a sensible height. Stubble fields are another good bet and offer the same sort of advantages. But beware of bales and other obstacles. Oh, make sure that the farmer doesn't set fire to the field whilst the glider is in it. This *has* happened!

When gliding out for a landing over relatively inhospitable areas it is obvious that the selection of a field and so on should be made at a much greater height. Sometimes, though, this is not done and you find yourself over hilly country at a low height. The temptation is obvious; fly into the valley to gain greater ground clearance. This is all very well, but remember that quite often the fields in a valley are poor, the wind may be different, the area may contain the main route for power cables and, of course,

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once you're in a valley there is no way out without lift. Have *you* ever had that trapped feeling? It's very nasty. The simple rule to remember in this case is that in most parts of the country the fields on the hilltops are generally more suitable for landing in than those in the valleys. (This obviously doesn't apply to the more desolate areas.)

A favourable situation to be in on a glide out is to be able to reach a ridge which is facing into wind. In this case you can, in effect, carry out a final glide to it and once there you can either soar until a thermal comes along or take your time selecting a field. But, be warned, make sure before you get too low on your way to the hill, that the wind is strong enough to produce sufficient lift. I believe that the ability to hill soar with confidence is an essential attribute of the successful cross-country pilot. In my own experience I have been saved from landing on tasks by convenient hills and I recommend all those without hill soaring experience to get some practice in. It could well make the difference between success and failure at some future date.

Thinking still about soaring near to the ground brings me to my penultimate point, the low scrape. Quite often you find a convenient thermal at about the time you're thinking about a landing. If it is a strong one then there is no problem; you climb back to height and continue the trip. However, it often happens that the thermal is a weak one and you sit in it and drift with the wind whilst more or less maintaining height. In these cases it is essential to continually reselect a suitable landing field and ensure that you stay within range of it until another one turns up. This may sound pretty basic but, in the excitement of the moment and the low scrape, it is easy to forget about the probable landing.

The final point I wish to make concerns final glides into a goal at the end of a race. I'll consider the two extreme cases, the low arrival and the high arrival. In the case of the low arrival the danger is that the pilot will realise at too late a stage that he is not going to reach the goal and then be faced with an extremely tricky field landing. A simple way to help you assess the final part of a glide into a goal is to use the constant angle technique, as already suggested in the section dealing with the final approach. In the case of a marginal final glide the same technique works very well (except that you will not be using airbrake) and, with the help of a mark on the windscreen, an early assessment of the glide can be made. If it is proving unsuccessful then a field landing can be commenced at a safe height.

In the other extreme, the high arrival, the problem is entirely different. When you find yourself with too much height for the final glide do not disregard the placard speeds by coming in much too fast. If you are high, swallow your pride and use a touch of airbrake to get yourself down below the maximum finish line height. It's very much safer this way. If you persist in ignoring placard speeds then one day the glider will break up around you. Placard speeds are there for a reason, so don't ignore them.

Conclusion

Field landings do involve risk but we overcome most of it in the early flights by giving our pilots dual field landing training at the Bronze C stage. Thereafter there is normally no further formal training and as a result relatively experienced pilots get themselves into difficulties. This article has highlighted some of the basic and more advanced techniques which can be used in field landings in the hope that pilots will be spurred into giving more thought and consideration to the problem. Perhaps the most important lesson to be learned is that the risk involved in field landings can be greatly reduced by making a decision to land at a good safe height. The press-on spirit is all very well but are the extra risks incurred worth it?

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NIMBUS

A Sailplane unique in Construction and Performance

By KLAUS HOLIGHAUS (Translated by RIKA HARWOOD)

The designing and construction of the Nimbus has taken Klaus Holighaus 18 months. The work was carried out in his spare time, evenings and weekends, at the Schempp-Hirth factory, with their help and co-operation. With the figures quoted in this article, the Nimbus must surely be the best performance glider flying at the moment.
No doubt the eyes of the gliding world will be focused on sailplanes like Nimbus and Sigma at the next world championships, as both these machines have been developed in completely different ways to increase performance.

SINCE the development of the D-36 and the BS-1 V1, no further forward progress has been made in glider design during the past five years to extend the boundaries of performance. A gliding angle of 45:1 and a minimum sink of 0.5 to 0.55 m/sec. have been considered as performance maxima which were scarcely capable of being bettered.

During this time, however, several production sailplanes have come very near to equalling these performance figures; and it had therefore to be considered how one could, in the light of updated aerodynamic knowledge and with the possibilities offered by new materials and technology, achieve a further distinct leap forward in performance.

Basic thoughts on Construction

Extensive investigations have been carried out by the recognised specialists into the aerodynamics of wing profiles. In view of this, therefore, it is not to be expected that in the next few years there will appear any novel profiles, without using boundary layer suction, such as would (by the same wide laminar bucket as the Nimbus profile) have noticeably lower drag coefficients. The possibilities of an increase in performance in this direction are therefore limited.

Leaving out of consideration the possibility of variable wing area, which involves a lot of technical expertise, the only way is to increase the aspect ratio with the proviso that at the same time one must achieve a reduction in drag coefficient on the fuselage and the tail.

Assuming the same span, we find that the two desiderata are in conflict, because an increase in aspect ratio means a reduction in wing area. The consequence is that the drag coefficient on the fuselage and tail increases because of its reciprocal relationship to the wing area. For the same reason the profile drag is increased because of the lower Reynolds Number (reduced mean chord). (See Fig. 1.)

With increased span, however, not only can one design for a higher aspect ratio but at the same time the wing area can be greater. The increased span reduces the induced drag coefficient and the increased area also works favourably by reducing the fuselage and tail drag coefficient. [Free translation, ED.] Thus the sole possibility for increasing the aspect ratio while maintaining the same mean chord is to extend the span to a maximum consistent with strength and stiffness.

A comparison of two aircraft with equal mean chord, but one of 18 and the other of 22 metres span, gives the following figures:

Span — metres - - -	18	22
Aspect ratio - - - -	25	31
A.U.W. — Kp - - - -	370	430
Wing area — Sq. metres -	12.9	15.6
Wing loading — Kp/sq. m.	27	27.6

Having the same wing thickness and almost the same wing loading, the Reynolds Numbers, and therefore the profile drag, for both aircraft are equal. The reduction in the induced drag and in the fuselage and tail drag coefficient

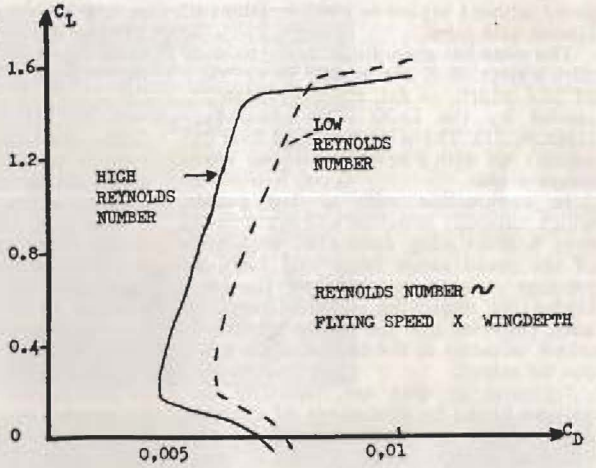


Fig. 1. The effect of Reynolds Number on profile drag.

has thus been brought about; for, as shown in Fig. 2, the induced drag has its principal effect at slow speed and at the best glide angle, while the influence of the fuselage and tail drag coefficient becomes more serious in the high speed range.

The result of this theorising is the Nimbus, having a best glide angle of 51:1 and a min. sink of 0.44 m/sec. As this sailplane is purely a private effort in development, and thought of as a "one-off" only, all the technical and aerodynamic possibilities could be investi-

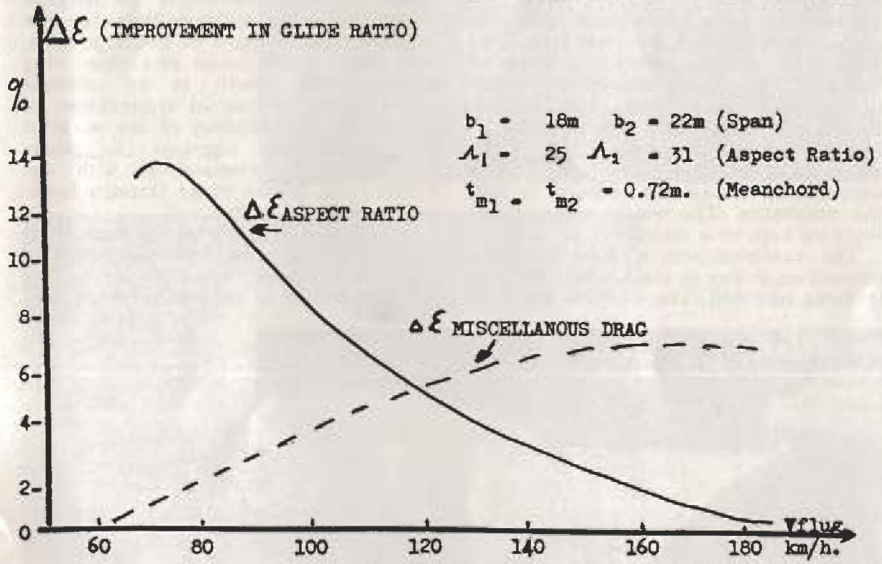


Fig. 2. Improvement in gliding ratio resulting from increased span and aspect ratio, retaining constant mean chord.

gated without regard to considerations of labour and time.

The wing has accordingly been designed with a span of 22 metres and aspect ratio of 30.6 which, so far, has only been exceeded by the D-30 with metal spar (approx. 31). The wing has flaps over the whole span with a newly-developed Wortmann profile.

In conjunction with a flap profile, which naturally provides an improvement over a fixed wing section at both ends of the speed range (slow and fast), an increase in span is obviously the ideal method of improving sailplane performance, provided that the strength problem, which increases as the square of the span, can be solved.

Increases in span are, naturally, not only restricted by limitations of strength. The straight and level flight polar and the best gliding angle indeed become better and better (see *Aerokurier*, April, 1968 — "Future Superships?", page 212). The ground handling, however, and the airborne handling rapidly approach a borderline situation beyond which the increase in performance cannot be utilised.

Constructional Notes and Description

The wing is a three-piece with the centre section almost 6 metres long. This three-piece construction for a wing of this total span is not only advantageous in keeping each individual section shorter and lighter, but it also makes it possible to put the connections of the pieces in a position where the stresses encountered are already reduced by half the maximum. The weight can accordingly be kept to a minimum.

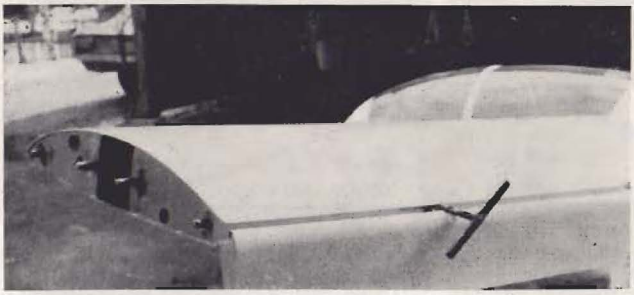
The centre-section is held by four connection points to the fuselage, so that it forms one unit. The wingtips are connected by means of a fork and tongue locking system, as at present used on GRP (glass reinforced plastic) sailplanes, the difference being that on the Nimbus the spar fork is recessed into the centre-section. Two strong dowels, 18 mm in diam., are fitted into the fork end and the joint is completed by a 32 mm. bolt — access to which is obtained through an opening at the rear of the centre-section.

This type of connection is only practicable because the flaps are hinged at the lower surface of the inner wing. The flaps also act as brakes and can be lowered to 90°, thus making it possible for the bolt to be inserted. (See photograph below.)

The simultaneous utilisation of flaps as brakes results in a worthwhile saving in weight as compared with Schempp-Hirth or DFS brakes; also a reduction in landing speed because the flaps do not spoil the lift.

The wing consists of an 8 mm. stiff sandwich of glass-fibre and foam (Conticell foam), which carries the torsion loads, and a box-spar made from glass-fibre rovings with glass-fibre and foam webs, to take the bending and diagonal loads. The spar dimensions are designed rather for wing stiffness than for the strength alone because of the large span, very high aspect ratio and thin wing section. This results in an ultimate safety factor at normal temperature of almost 20. The bending of the wingtips before fracture amounts to some 5.6 metres in comparison with the Cirrus wing, which broke through bending at almost 4 metres.

A new and very successful method of building the wing has been employed in order to obtain an exact profile on the wingtips as well as the centre-section, and



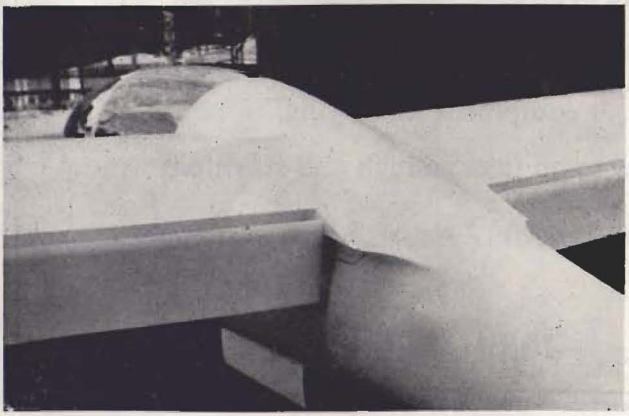
See description above.



The pick-up points on fuselage for centre-section.

Front view of fuselage.





Flaps fully down at 90°.



Photo: Frank Irving

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minimum weight. By means of an endless strip of thin polyester and a large number of negative ribs made of Conticell-foam, a so-called "temporary negative mould" was made and from this, in the customary way of "negative building", the shells were moulded. The result is a considerable reduction in weight compared with other construction methods and much less necessary work in achieving the final finish.

A square-section steel tube is built into the leading edge of the flaps and part of the ailerons. These can be filled with lead in the event of flutter developing in them.

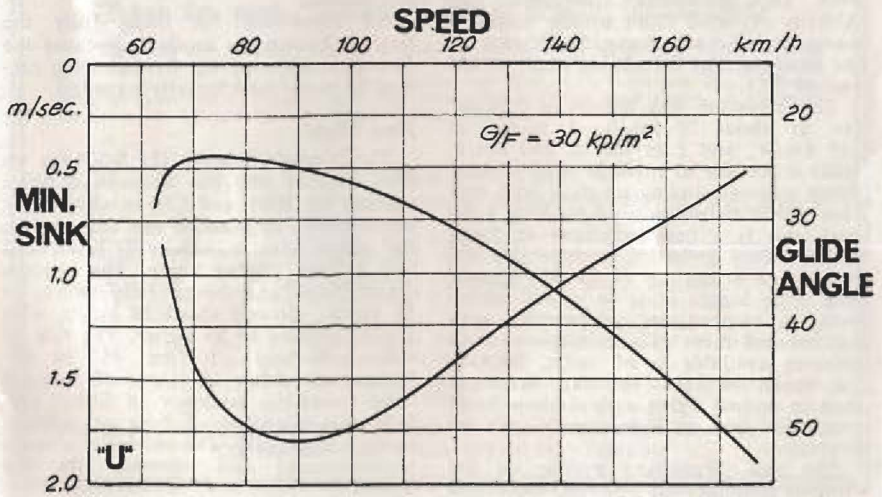
The gearing of the flap operating mechanism is so arranged over the travel of from +6° to −8° that in the slow-flying position of positive flap the aileron has 20% greater operating travel than in the fast-flying negative position. Thus the rate of roll in slow flight is increased and in fast flight overloading of the wing through excessive aileron travel is prevented. The differential of the ailerons is in the ratio of 1 to 2.5 so as to provide the lightest stick force and a practicable trim in circling flight.

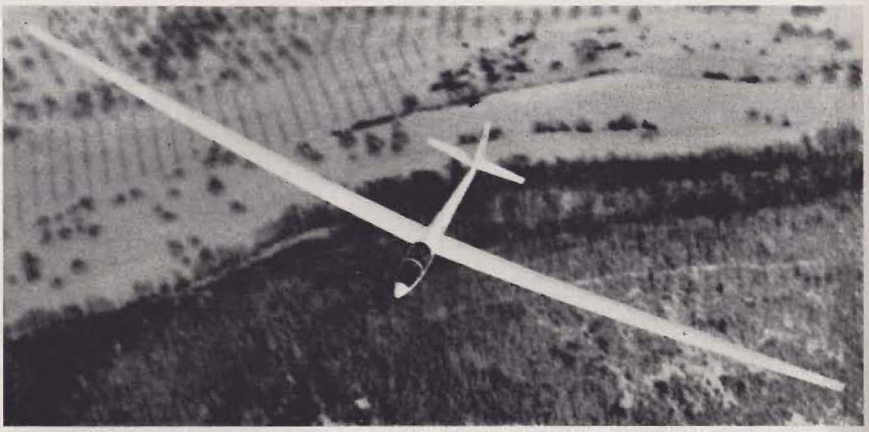
The Fuselage

The fuselage bears a resemblance to that of the Cirrus, but the cockpit is lower and longer. The forepart of the canopy is fixed, the rear part is hinged. The perspex canopy is tinted light blue to minimise glare.

The retractable wheel is progressively sprung to deal with the maximum all-up weight of 500 kg. It carries a 360 mm. tyre. The tubular steel structure joins the wheel mounting, the wing attachments and the fuselage; by this method landing shocks and wing weight are borne mainly by the steel framework and transmit only light loads to the fuselage shell. On the steel tubing are mounted all control attachments and harness mountings.

The fuselage comprises a forepart of glass-fibre and a glass-fibre and balsa wood sandwich for the wing attachment as far as the tail, which last is of glass-fibre and foam sandwich construction. The cockpit lining is glued to the outer skin





One of the first photographs taken of Nimbus in flight. (Photos by Klaus Holighaus.)

to give rigidity to the front. The instrument pedestal is also fitted with this in mind. The top of the pedestal has been fitted with a map holder. Pitot pressure and ventilation are taken from the nose cone. There are towing hooks on the wheel mounting as well as in the nose.

Performance in Flight

From the beginning of construction Prof. Dr. Wortmann and Dipl. Ing. Althaus expected from profile measurements and the aerodynamic efficiency of the fuselage that the gliding angle would exceed 50:1.

The minimum sink figures of 0.44 m/sec. at about 70 km/h., 1 m/sec. at 135 km/h., and 2 m/sec. at 180 km/h. make it possible to envisage cross-country flying without circling on days with uniform cloud distribution. In practice, however, this is a new technique of flying which means gathering considerable experience, also the use of the MacCready ring is no longer quite so useful. Moreover, a compensated variometer with quicker and more reliable response than hitherto available is of value. Because the speed between thermals is lower than in normal flying with circling, however, this last problem should not be overrated.

The new Wortmann profile on the Nimbus simplifies the optimum operation of the flaps compared with current flapped aircraft because there are in practice but three flap settings, +6° for circling, zero flap for best glide, and −8° for speed flying from 120 km/h. upwards.

Due to the wide laminar buckets for each flap position, which overlap mutually, a change from lower to higher speeds or vice versa is possible without any losses.

All conditions for using fully the laminar bucket are available because the flow separation of the flapped wing section is more than usually harmless.

First Flight

The Nimbus flew for the first time on 25th January and has since been flown against the BS-1 and Cirrus, showing a performance as good, if not better, than the calculations, especially at low speed and at best gliding angle. The landing speed, flaps and brake fully down, is 56 km/h., circling speed 70 km/h. with a wing loading of 29 kg/m². The rate of roll at 85 km/h. is from 45° to 45° 5½ seconds. After 20 hours of flying I have found no tendency to flutter and full mass-balancing of flaps or ailerons seems unnecessary. The rudder is already mass-balanced and damped, like the Cirrus.

CIVV (Ex CVSM) MEETING

THE meeting, held on 6th-7th March in Paris, was well attended. The main work was the revision of the *Code Sportif*, the 1970 World Championships, Motor Gliders and Medical Standards.

World Championships. The proposals for this revised section of the *Code*, prepared by the writer, as CIVV sub-committee chairman, was dealt with and agreement reached for its use as the General Regulations for 1970. The SSA will produce the complementary Local Regulations, and will try out all these regulations and the proposed scoring system this year at Marfa.

Revision of Parts 1 and 2 of the *Code*. Discussions took place to enable the writer to go ahead with the full draft revision. The feeling of the meeting was:

(a) that motor gliders could be used for record and badge flights, provided that it was *not possible* to restart the engine during flight;

(b) that a speed flight was contained between the start and finish lines — the flying the glider did before and after was unimportant;

(c) that provision might be made for the starting and finishing of a triangle from any point on the course;

(d) that the 300-km. goal Diamond should be replaced with a 300-km. triangle carried out at a minimum speed of 60 km/h.

The full draft proposals will be circulated to all National Aero Clubs for *decision* at the meeting on 13th-14th November. So that motor gliders may be used for badge flights this year, interim requirements for 1969 will be circulated in the Minutes. These include the statement that badge or record flights on a motor glider may start only with an observed crossing of the start line with the engine stopped.

Marfa, 1970. Indications are that this will be a full house, but it is not yet known whether the organisers will be able to take four per country or not.

Standard Class. No changes (apart from the retractable undercarriage already agreed) will be allowed in 1970. For 1972 the alternative of conventional airbrakes or simple flap/airbrakes will be allowed in accordance with a precise definition, yet to be written. No further changes will be allowed before 1977, in order to stabilise the value of gliders in the class, and to help manufacturers keep down production costs.

Motor Gliders. The German definition

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was tabled, with the object of deciding on an CIVV definition in December.

Medical Standards. It was agreed that widespread evidence was available to show that accidents among soaring pilots due to medical reasons were negligible, and there was no advantage to be gained by requiring medicals, certainly for solo flying. Philip Wills's paper would be circulated by FAI.

ANN WELCH

SIR ROBERT HARDINGHAM

BOB HARDINGHAM, who received a Knighthood in the New Year's Honours List, is one of the half-dozen people who, by his unswerving support over the years for British gliding, enabled us to acquire and retain the control of our own affairs.

As Chief Executive of the Air Registration Board, he has always assured any doubting Ministerial Thomases that we are perfectly capable of looking after our own technical affairs.

Perhaps the sternest test came in late 1951, when the Board's Test Pilot had certain criticisms of the handling qualities of the prototype Slingsby Sky, with which the BGA Test Pilots' group disagreed. To modify the aircraft in an attempt to meet this criticism might have ruined its performance, and the 1952 World Championships were looming, in which we were to be equipped with the Sky.

We had a special meeting with Bob, at which we also had the help of Sir Arnold Hall, who at that time was Zaharoff Professor of Aerodynamics at Imperial College, and had just handed over the Chairmanship of the BGA Technical Committee to Frank Irving. After a long discussion the ARB conceded our case.

The subsequent history of the Sky showed we were right. If it had, after all, proved to have a dangerous stall, we had been wrong, and the official Test Pilot right, Bob might have been in trouble. But his confidence in us was complete; had it not been, we would probably not have won the 1952 World Championships, with all that followed from that.

Our most sincere congratulations and good wishes.

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During Prince Philip's visit on 6 February, he spent some time talking to Nick Goodhart and John Sellars about the Sigma project (photo left) and also Derek Piggott held the Duke's concentration as he showed him round the Sopwith Camel (photo below). Derek is now once more C.F.I. at Lasham.

HRH PRINCE PHILIP

VISITS

SLINGSBY AIRCRAFT





Photographs by
KEITH MASSEY



One of the RAF T-53's was also on show and Prince Philip is seen with Bill Slater to the left. Just before Prince Philip's visit ended, he laid a commemorative stone for the new factory which will replace that destroyed by fire in November. Jack Bradley looks on.

AILERONS OR SPOILERS?

By JOHN C. GIBSON

HUMPHRY DIMOCK can relieve his mind; at least three modern aircraft have spoilers and no ailerons, so there is nothing heretical or blasphemous in proposing the idea for gliders. Also, "spoiler" is a well-established term in its own right, needing no extra embellishment for this application.

Spoilers are merely upside-down split flaps mounted forward of the trailing edge. When deflected upwards they produce a downwards change of lift. If at the same time they form the shrouds of high-lift flaps, a further effect of raising them is to destroy the carefully-shaped slot which keeps the airflow attached to the flaps. The result is very powerful control when the flaps are extended, less so when the flaps are retracted. The advantage of this is that quite small spoilers can be used which will have adequate low speed power while not being greatly oversized at high speed, a perennial problem with ailerons.

Ailerons produce adverse yaw by changing the induced drag of each wing differentially. Some attempt is usually made to limit the effect by differential aileron operation, so that more profile drag is produced on the up-going aileron. The problem is mainly a low speed one, because the induced drag effects are greater, the aileron profile drag smaller, and the weathercock stability lower, than at high speed.

Use of a spoiler alone does not really change the induced drag effects very much. Because only the spoiler on one wing is used at one time, it has to produce twice the lift change of each single aileron to give the same rolling moment. Thus a similar adverse yawing moment results from the similarly large induced drag changes. However, the profile drag is so much greater than for an aileron that it is possible to cancel the adverse yaw at some high lift coefficient. At higher speeds the induced drag effects are less while the profile drag increases. This results in "proverse" yaw into the turn, which may seem a good idea but would probably be quite large and which requires a most unnatural rudder coordination to correct. Proverse yaw can cause severe handling difficulties, even leading to pilot-induced oscillations in roll, for certain aircraft configurations, but I would not expect this for gliders.

As shown above, spoiler operation causes a loss of lift, whereas the lift changes from aileron operation cancel out apart from any difference caused by the aileron differential. Because the roll damping of a glider wing is very high, a large control moment is needed to overcome it. The lift changes could be considerable, certainly noticeable at circling speeds and embarrassingly large at high speed, possibly of the order of the glider's weight.

The drag of a deflected spoiler is very considerable compared with an aileron, despite the "tormented airflow past the steps" of the latter. If it were not so there would be little hope of countering the adverse yaw, since even large amounts of aileron differential do not entirely succeed. In most mixed aileron/spoiler systems the spoilers remain closed until the ailerons have moved several degrees. This allows roll trim to be applied without a large drag penalty. With only spoilers to control roll, a glider would suffer an appreciable loss in performance while circling. Also, if one considers the separated wake thickness behind a fully opened spoiler, it is not easy to believe that this could produce less drag than even the traditional "bootful of rudder".

At high angles of attack on a clean wing, i.e. with high lift flaps retracted, spoilers become ineffective for small openings. This produces a marked deadspace in the control characteristics at low speeds. At and beyond the stall, spoilers may have no effect whatever, and are very unlikely to make any difference to spin recovery. However, because they work by reducing lift, they could give better control of pre-stall wing drop than ailerons in certain cases. They work well in inverted flight too.

It may be seen from the foregoing that I do not support the plea to throw away our ailerons. However, in certain cases

use of spoilers would be valid on gliders, and a very good example is the BJ-3 sailplane (described in SAILPLANE & GLIDING, Oct.-Nov., 1965). This has Fowler flaps over 80 per cent of the wing span, with very small ailerons at the tips which are sufficient for control at high speeds. Just inboard of the ailerons are spoilers of about the same size, which form the flap shrouds locally and which open in the non-linear manner described above. In this way, like most large aircraft which also use such a system (e.g. the VC10), greater use can be made of high lift flaps without loss of low speed roll control, while also avoiding the worst features of spoilers.

Correcting for adverse yaw is, of course, usually quite simple when there is a visible horizon, and at one's customary circling speed it is not difficult to establish the proportional rudder application needed to match any aileron input. I do not know if it is generally realised that confusion can arise from use of the so-called slip ball when this is the only reference in cloud to lateral motions. It may be thought that a well co-ordinated turn entry requires the ball to be kept in the middle, but this is not so. Sharp application of the aileron to the left with the rudder held central will cause the nose to swing to the right, and hence the ball will be displaced to the left. This ball movement is further sustained by the sideslip which follows. If, say, full rudder is applied with the aileron, while the nose may now commence to swing to the left in a smoothly co-ordinated manner, the ball will still move to the left initially as before. This is because the rudder produces its yawing moment by applying a side force at a distance from the centre of gravity. Thus, although the two yawing moments are balanced out, the side force is not balanced and results in an acceleration of the glider to the right. As the slip ball is sensitive only to lateral acceleration, it will move to the left.

There is only one practical device to measure transient sideslip on gliders, and that is the now-despised piece of string. This causes much less confusion during manoeuvres than the ball is likely to. I hardly dare say this to owners of £3,000 sailplanes, but if you have not already got one, why not try this cheapest of all instruments?

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AN ABSOLUTE MUST FOR EVERY ENGLISH-SPEAKING GLIDER PILOT

FLYING THE SF-27M

By ROGER NEAVES

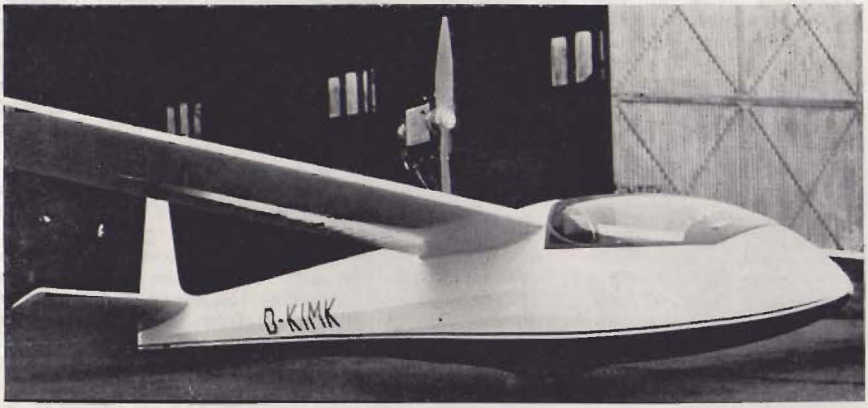
SEVERAL weeks ago I had the good fortune to be asked to fly the Scheibe SF-27M, one of the first genuine high performance motorised sailplanes. The flight was the air test for a PFA C. of A. in the disappointing absence—at present —of BGA machinery for certification.

The SF-27M is the Standard Class Scheibe Illerschwalbe fitted with a Hirth two-stroke motor mounted on a pylon which is retractable into the fuselage aft of the wing trailing edge. When retracted, the unit is concealed beneath flush fitting doors which open and close in a most exciting manner. At first sight the engineer responsible appears to have leaned considerably on Messrs. Heath Robinson & Emmett and closer inspection only confirms this. Nevertheless, it works, and critics would be advised to try to improve on it.

As the propeller is geared down, starting by prop-swinging is not possible and the motor is started by the now conventional pull handle mounted below the instrument panel in front of the stick. The throttle and choke are on the left of the cockpit near the instrument panel, the combined propeller brake and pylon lock near the left elbow and the large winding handle for the engine up and down position on top of the right cockpit wall. With the controls scattered about in this way you need to work like a one-armed paperhanger when restarting in flight. The only engine instrument is a rev-counter mounted on the panel in amongst conventional glider-type instrumentation. Also on the panel is the single ignition switch.

At first sight, with the motor retracted, the SF-27M looks like any other glider. The lines are pleasing and apart from the engine doors there is nothing remarkable about its appearance. However, when one notices it gently sinking into the tarmac one begins to realise that the wing loading might be rather high. The narrow main wheel is mounted well forward of the centre of gravity. The tail wheel is non-castering, causing the ship to be reluctant to proceed in anything but a straight line. This is an embarrassment when ground handling and is made worse by the total absence of any means of lifting the tail. SF-27M owners will no doubt be inventing ingenious ground handling dollies, although why the designer couldn't have provided a tail lifting handle is a mystery.

Starting the engine from cold is straightforward, but in the cramped cockpit, plus cold-weather clothing, considerable energy must be expended on the pulling device. Once running, the engine is smooth above about 1,950 r.p.m. Below this there is considerable vibration due to reduction gear clatter and



The SF-27M with engine extended. (Photo by P. Jeffers.)



Engine in semi-retracted position with doors open.

four-stroking. I imagine that individual engines vary and that this one might have been worse than others. With wing-tip stays fitted, taxying under one's own steam is possible, but the fixed tail wheel necessitates considerable forward speed to get efficient rudder control. On rough surfaces the pylon bangs about alarmingly and so the procedure is not recommended. This is a pity when the whole object of a powered sailplane is to minimise third party assistance.

With my 200 lb. weight and a soft airfield surface I was prepared for a long take-off run in the nil-wind conditions. What actually happened was that on applying full power, the machine gently nodded about the main wheel until I was looking ahead at the ground. Throttling back allowed the ship to return to a more sensible attitude. It was clear that something more than the Hirth was needed to disinter the main wheel and so motor cars and ropes and people were used with success. In fairness, the surface was very soft and the high-mounted engine gives a nose-down pitching movement anyway.

The second attempt was much more satisfying, in that we moved, albeit slowly, in the direction of take-off. After what seemed like several minutes, the upwind boundary, some 800 yards from the take-off point, appeared to be getting rather close. This would have been all right if we had been airborne. However, we finally made it and things began to be more as Scheibe had intended. Subsequently, with a lighter pilot, and again with me but on harder ground, the take-offs were entirely satisfactory.

The weather was not really conducive to accurate performance measurement, but the rate of climb seemed to be around 400-500 ft/min. This brought us to the 1,500 ft. cloudbase in a satisfyingly short time.

Throttling back produced the normal two-stroke vibrations—she is definitely not happy at low power settings. One needs to throttle back quickly when levelling off or the r.p.m. quickly reach the maximum permitted. The effect on the aircraft of power changes is very small — slight nose-down when the throttle is opened and vice versa for throttle closed. Yaw with power change is negligible as is the amount of rudder needed at full power in the climb.

After playing with the power it seemed about time to experiment with the retraction. The most important thing to do is to stop the engine first. This is achieved by throttling back and switching off the ignition. Next the prop brake is applied and the fuel turned off. For retraction, the prop must be vertical and to aid this operation a rear-view mirror is provided above the panel. This serves the double purpose of enabling lady pilots to repair the ravages of a day's gliding prior to meeting a handsome farmer. The starter pull is used to align the prop with the vertical pylon. The brake is adequate to keep the prop from turning unless the speed goes above 50 knots, so care is needed. The retraction is performed by operating the winding handle for 3½ turns and engaging a spring-loaded spigot in the hole provided. The spigot is sub-

sequently withdrawn for motor extension by pulling the winding handle inboard.

Now, all being well, you have a glider and a very good one too. The general feel, including rate of roll, is what you would expect from a modern 15-metre. The all-moving elevator has a geared anti-balance tab and is not too sensitive although the stick force per "g" is rather low. The tab is also operated by the trimmer for conventional trimming.

As already stated, one could only assess the performance qualitatively. Min. sink is around 1½-2 knots at about 40 knots. Circling seemed best at 45 knots. On a straight glide she tucked up her skirts and fairly hurtled away. Very satisfying.

Stalling is fairly straightforward but with a tendency to drop either wing. Recovery is immediate when the back pressure on the stick is relaxed, and rudder easily holds the yaw with wing drop. There is some aerodynamic stall warning, both brakes open and brakes closed. Spinning is prohibited on the German C. of A. and anyway the lowish cloud caused me to chicken out.

For first attempts at restarting in flight, one is advised to commence fairly high. I left it to about 500 ft., but luckily, due to practice on the ground, there was only one hitch. Yes, I did unlock the pylon. Yes, I did operate the winder. Yes, I did turn on the fuel. Yes, I did increase the speed to 60 knots. Yes, I did set the choke and throttle as per the book. Yes, I did pull the starter . . . But, I did forget to turn on the ignition. I realised this some 300 ft. later on the base leg, after considerable pulling and swearing. Believe me, I had very nearly given up motor gliding.

A last despairing check revealed the offending switch in an accusingly "off" position. Once this state of affairs was rectified she started at first pull and the game was on—back to cloudbase with a red face. Several more restarting cycles worked very well but it is necessary to keep the speed well up to take advantage of the windmill effect, otherwise pulled muscles and slipped discs occur. When pulling the starter, the stick must be held in the left hand. Some practice is necessary to prevent very pilot induced oscillations.

Approaching to land as a glider, motor in or out and stopped, presents no problems. The brakes are adequate, and with the motor extended only a little more height is necessary for the final turn. There is, however, little point in landing with the motor extended, except to see if it will stand up to the bump (it did) or to practise in case you fail to start low down and haven't time to perform retraction. It is possible to land power on if you can stand the vibration, and an overshoot is quite straightforward.

My impressions were largely favourable and, with some redesign to help with the ground handling, Scheibe has a winner on his hands. I shall be interested to see how these devices catch on. For my money, I hope they're here to stay.



SF-27M in glider configuration.

(Note that the machine illustrated on page 496 Dec-Jan. 1969 issue was not the SF-27M but the K-14.)

NEW ZEALAND NATIONALS

By ROSS MACINTYRE

THE 6th New Zealand Gliding Championships were held at Omarama in the South Island from 5th to 15th January.

Omarama is situated in a gigantic river basin which is as much as 30 miles wide and nearly 100 miles long. There are three large lakes in the area. At the head of one, Lake Pukaki, is Mt. Cook, the highest mountain in NZ at 12,349 ft. The basin itself is 1,200 to 2,000 ft. high, so this is mountain country on a grand scale. Gliding conditions match the country—strong thermals, strong downdraughts and a truly gigantic wave system.

Day 1, 5th January.—The contest got under way in the lee of a cold front with a task of twice around a 98-km. triangle; turning points at Lake Pukaki (only 20 miles from Mt. Cook) and at Lake Ohau. Good thermals in the lee of the front were short-lived, and strong westerlies returned with some wave activity. Only three completed the course. Peter Heginbotham (Phoebus 17) took 4 hr. 20 min. to win the task, indicating the difficulty of getting around the second time. About seven others completed one time around and then landed out.

LEADING RESULTS

	km/h	*Open*	*H'cap*
Heginbotham	44.1	1000	923
Georgeson	39.5	949	890
Hookings	39.1	945	913

Day 2, 6th January.—Another cold front went through in the morning and briefing was delayed to 11 a.m.; then a 110-km. out-and-return was set, with the turn-point at Irishman Creek. Mixed thermals and wave were indicated, so all except one of the 5 finishers took thermals to 8,000 ft. cloudbase or higher, and pushed forward into weak wave. The exception was Tony Barrow (Ka-6), who doggedly thermalled his way out and back. Dick Georgeson (SHK) was first home and made fastest time—1 hr. 54.5 min. He did not have to circle all the way home but sat at maximum rough-air speed, so obviously there was a slow outward leg.

LEADING RESULTS

	km/h	*Open*	*H'cap*
Georgeson	61.3	733	708
Pryde	54.6	707	675
Jackson	43.9	663	663
Coutts	40.6	652	658
Barrow	36.5	639	638

Next day it rained, and even snowed lightly on nearby peaks as more frontal systems moved through. A rest day was declared.

Day 3, 8th January.—Task, twice round 78-km. triangle. No one completed it because a storm moved into the area during the afternoon. Weak

SHK lands at Omarama.



thermals before it, strong lift on the leading edge of the storm, and snow, rain and no visibility through it. D. Yarrall (SHK) left early and went around once and landed at the 2nd turning point on his second circuit. Peter Heginbotham and Dick Georgeson left later and had a wet retrieve. Re-launched, they managed one complete circuit by about 6.30 p.m. for 2nd place equal. The rest of the field were caught, mainly on the second leg. Ian Pryde damaged his Libelle on landing and withdrew.

LEADING RESULTS

	km/h	*Open*	*H'cap*
Yarrall	130	755	755
Georgeson	74.5	373	347
Heginbotham	74.5	373	226
Pryde	58	260	235

Next day, after rain cleared at noon and convection had failed to start by 2.30 p.m., a triangle task was cancelled.

Day 4, 10th January.—Task was an 87-km. Out-and-Return to Simons Hill (North of Omarama). This turned out to be a really exciting race day. Eleven out of 12 starters completed the task, some as much as three times. Excitement mounted as the times of each trip became shorter. Georgeson got home first in slow time, then Yarrall in 1 hr. 2.5 min. He reported having trouble getting to the start line at 3,000 ft. because he was flying at 100 knots but still going up at 4 knots. He later made a timed climb which came out at 2,000 ft/min. in thermal-assisted wave rotor. The whole day had this strong convection. Tony Barrow did the trip, crossing the finish, as required, below 1,000 ft. He then thermalled up again and repeated the task twice more.

LEADING RESULTS

	km/h	*Open*	*H'cap*
Yarrall	113	1000	809
Hookings	101.45	820	706
Heginbotham	98.6	780	595
Georgeson	97	756	615

Yarrall won the Hookings trophy for this flight.

Day 5, 11th January.—Task: 111-km. Triangle. Conditions were still strong, but not as strong as the previous day. Ivan Evans in a Ka-7 Rhönadler (which he normally flew solo) took his wife as passenger and had a crack at the two-seat 100-km. Triangle record. His time of 2 hr. 9 min. did this handsomely—although ratification is yet to come. This was not good enough, however, to win the day. Peter Heginbotham found conditions very much to his liking on his second attempt, and he completed in 1 hr. 29.5 min. for first place. He said things had smoothed out by 3.30 p.m. when he took off, and the laminar flow over the Phoebus's beautiful wings was not disturbed by turbulence. He used only two thermals, one to 9,000 ft. and one to 6,000 ft. asl.

LEADING RESULTS

	km/h	*Open*	*H'cap*
Heginbotham	74.5	1000	968
Yarrall	56.9	774	802
Evans	55.2	761	1000
Georgeson	54.8	748	778

Day 6, 12th January.—Very strong conditions again tempted the task-setters into a 164-km. triangle with one leg well to the north at Lake Tekapo. However, a sea-breeze effect sent an easterly across the McKenzie plains and killed thermals

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Phoebus 17 *flying over typical country during the contest.*

in that area. Gordon Hookings completed the task but forgot the 2nd turning point; he therefore set off again. Meantime, the majority of the field had arrived near Lake Tekapo and landed. Hookings realised the easterly had cut things off, so he set off up the Ohau Range toward Mt. Cook and the main divide. He then rounded the point at Tekapo and scraped back to near the second turning point.

LEADING RESULTS

	km/h	*Open*	*H'cap*
Hookings	122	800	800
Georgeson	103.5	733	720
Cummins	75	431	550

Yarrall hit a boulder on landing and was out of the contest.

Day 7, 13th January.—Twice round a 55-km. triangle (keeping away from the easterlies). A forecast of high cirrus in bands caused Heginbotham to leave early while others waited for things to improve. He struggled in narrow rough thermals for 3 hours. Georgeson took longer, 4¼ hours, and the only other pilot to finish was Eoin Coutts in an Olympia 463.

LEADING RESULTS

	km/h	*Open*	*H'cap*
Heginbotham	56.2	1000	1000
Georgeson	38.2	831	883
Coutts	34.3	703	887

Tuesday, 14th January: persistent rain.

Day 8, 15th January.—The rain cleared early and strong thermals were expected. Task was 92-km. Out-and-Return, the same as the 4th day. All starters completed the task at least once —some up to three times. Last to complete was Peter Heginbotham in the fastest time, on his third attempt. It was computed that if he could complete in 58 minutes he could win the Open Class. Excitement was high—but he took 1 hr. 9 min. compared to 1 hr. 12 min. for Georgeson. Hookings took 1 hr. 14 min.

LEADING RESULTS

	km/h	*Open*	*H'cap*
Heginbotham	80	1000	1000
Georgeson	78.85	822	884
Hookings	73.7	725	832

FINAL LEADING RESULTS

	Open	*H'cap*	*Std*
Georgeson (SHK)	5945	5825	—
Heginbotham (Phoebus 17)	5770	5278	—
Hooking (Phoebus 15)	4687	4449	5564
Barrow (Ka-6)	3700	3913	4324
Kendall/Goddard (?)	3685	3596	—
Yarrall (SHK)	3441	3215	—

The South Island was jubilant that their home-grown world record holder has at last become the New Zealand Open and Handicap champion.

GLIDING CERTIFICATES

THREE DIAMONDS COMPLETE

No.	*Name*	*Club*	*1968*
11	D. Brennig James	Thames Valley	9.6

DIAMOND HEIGHT

No.	*Name*	*Club*	*1968*
3/86	C. G. Day	Surrey & Hants	17.10
3/87	H. F. Jaques	Surrey & Hants	17.10

DIAMOND GOAL

No.	*Name*	*Club*	*1968*
2/280	P. H. Guest	Essex	14.2
2/281	P. S. Bryan	Norwich	14.4

GOLD C COMPLETE

No.	*Name*	*Club*	*1968*
219	P. H. Guest	London & Essex	14.2
220	C. G. Day	Surrey & Hants	30.9

GOLD C HEIGHT

Name	*Club*	*1968*
K. Rylands	Midland	13.10
N. W. Smith	Wrekin	5.5
W. E. Goldstraw	New Zealand	16.1
R. E. Cross	Surrey & Hants	17.10
A. H. Taylor	Surrey & Hants	17.10
H. F. Jaques	Surrey & Hants	17.10
L. Redshaw	Lakes	3.11
S. H. Wearing	Lakes	3.11

SILVER C COMPLETE

No.	*Name*	*Club*	1968
2340	D. H. Palmer	London	29.3
2341	C. R. Scarborough	Midland	29.9
2342	W. D. Taylor	Deutche Aero	20.8
2343	J. D. Kape	Thames Valley	3.11
2344	Miss M. S. Benton	E. Midlands	29.10
2345	R. D. Carswell	661 G.S.	24.11
2346	J. B. Wilson	Kent	1.10
2347	R. H. Traves	618 G.S.	24.8

MORE ABOUT PIO's

By BRENNIG JAMES

APART from Wally Kahn's "Obituary", by far the best part of the February *S. & G.* were the letters attacking Frank Irving, but to be fair to Frank, he is trying to make comprehensible something which is both important and highly involved.

There are two ways of understanding PIO's. One is to study the theory, which involves a lot of higher mathematics, which Frank is very good at, or you can play around with the thing and get the feel of it.

If you look at your hands you find they are gently shaking at about 5 cycles per second; if you shake the wing tip of a glider you will find that it waggles at about 2 or 3 cycles per second. In other words, the natural frequency of the wing and the natural frequency of your postural control loops are about the same.

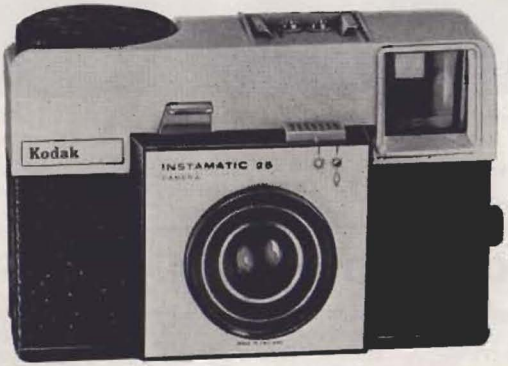
If you had a very twitchy elevator it is possible that your shaky hands and your shaky wings could get a period on. The fact that this does not happen all the time is largely because there is not enough gain in the system at the frequency in question.

Let us do an experiment. Jump into an 18-m. Diamant and get a launch to 6,000 ft. Trim fully forward, flaps fully up and fly at 80 knots. You will now find she is nose heavy; put the speed up to 90 knots and she is still more nose heavy. It is fairly obvious that if you let go she will just do a bunt. You are statically unstable and you have a lot of gain in the elevator circuit, so that the least little movement makes the nose jump about. However, in practice the machine can be controlled and flown straight and true. Now pull her up in a gentle zoom and you will find that instead of a nice round climb you will describe a scalloped curve.

Repeat the experiment and you will find that it is quite difficult to pull out in a nice smooth curve. In other words, you were previously in a condition of conditional stability, which was turned into instability by the action of commencing the zoom. The instability could just as easily have been brought about by some atmospheric turbulence, so you cannot count on conditional stability as a reliable entity; it may disappear just when you need it.

1969 B.G.A. General Regulations:

"The only acceptable camera is the Kodak INSTAMATIC 25"



The Kodak 'Instamatic' 25 camera has been specified by the British Gliding Association as the camera to be used in competition gliding.

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It's easily loaded. The film is in a cartridge which simply 'drops-in' to the camera. It only 'drops-in' one way, so you can't misload. There's no film threading — no fumbling. It has a double-exposure prevention device, so you can't take 'two-on-one'. You have a choice of either black-and-white prints, colour prints or colour slides. The large, eye-level viewfinder lets you compose your picture easily, instantly. It's light, compact and easily stowed away when not in use; a pocket will do. The 'Instamatic' 25 camera is rugged, reliable, inexpensive. Recommended retail price is just 56/- (case only 12/3).

Kodak

'Kodak' and 'Instamatic' are trade marks.

When you are just taught to fly straight and level, you are told to look at the horizon (i.e. set up a visually stimulated control loop). Later on you learn to dispense with this stimulus so that you can read a map while flying; clearly you are now using seat force and stick force as feedback stimuli. When you are flying fast and nose heavy the stick force stimulus pulls the wrong way and the stick force per subjective *g* (i.e. seat force) is a time function. In other words, you move the stick and nothing happens until the wings have bent a bit, so that a phase lag of about 1/5th per second is introduced. This is nasty as it is just about the same frequency as your own stick servos, and as you scallop away you can almost hear your brain saying, "Too little, too much, too little, too much" at itself several times a second.

So far this is all under 100 knots and if this happens at 150 knots the frequency and amplitude may cause complete mental disorientation so that the machine breaks up and you don't know why. I believe this is how several glass-fibre sailplanes have broken up, and it augurs badly for Marfa, where between thermals speed will need to be high.

In conclusion:

1. Never fly an exotic faster than 90 knots below 500 ft.—you scallop yourself into the deck.
2. Practise at low speeds, e.g. 90 knots in a climbing attitude to familiarise yourself with PIO's.
3. Climb up the speed range very gingerly, if at all. In this country 90 knots need never be exceeded except for aerobatics.
4. PIO's are highly dangerous. Don't play with fire until a lot more is known about them.

COMMENTS BY FRANK IRVING:—It is very kind of Brennig to illuminate my "mechanical" consideration of PIO's by a description of the physiology involved.

Given a machine such as his Diamant, the instructions given in his summary seem to be very sensible. But surely it is more to the point to have gliders which do not make excessive demands on the human feedback system? As he remarks, there is a lot of gain in the elevator circuit (i.e. a small stick force or stick movement input produces a lot of "g" and acceleration in pitch), on which is superimposed further confusion due to the natural frequency of the wing in bending. So the whole situation could be improved, if not entirely eliminated, by reducing the gain. In effect, this means providing some stick-free stability and a reasonable stick-force per "g".

I think Brennig might agree that it seems better to tailor the characteristics of the vehicle to those of the human servo rather than to try to modify the human response. Some months ago, a report on an investigation into an accident to one of the NASA lifting-body vehicles was published in *Aviation Week*. This had some very odd lateral characteristics, and the pilots had been given many hours in a simulator in an attempt to modify the way in which they applied corrections to suppress a Dutch-roll tendency. Faced with an emergency on the approach, the pilot's "natural" reactions re-asserted themselves and his consequential failure to prevent rather wild rolling motions contributed to the eventual accident. Moral: even the resources of NASA are not necessarily sufficient to brainwash pilots into coping with inherently unsatisfactory vehicles.

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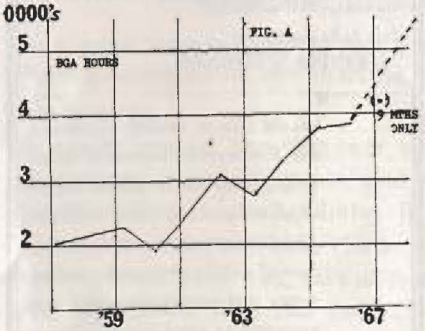
By J. J. ELLIS

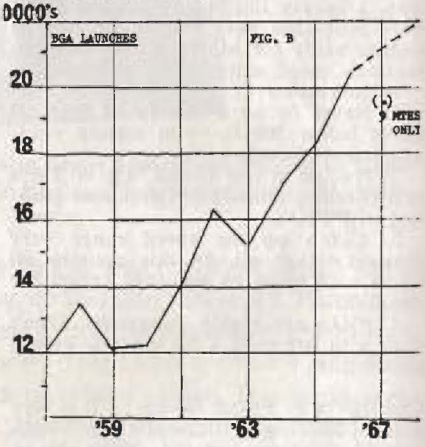
Addendum to the 1968 Safety Panel Report

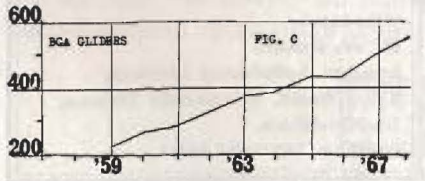
The 1968 Report was not as comprehensive as usual, due to the lack of club statistics. These now being available, it is possible to publish slightly more comprehensive graphs, as shown below.

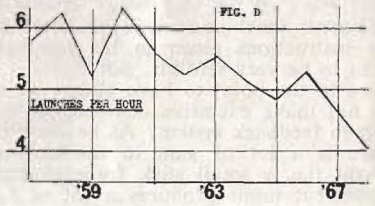
Graphs A, B, C and D are given for interest, as they show the quite startling increase in our activities over the last few years. Graph E is self-explanatory and shows the number of "substantial" accidents we have had are in the order of 45 to 55 per year. However, this must be related to the total hours and launches, as shown in graphs F and H, where accidents are given as a rate. Graphs G and J give similar rates in terms of reports received, which, of course, include all accidents and incidents received by the BGA. F shows a very great improvement, but, of course, the more one is airborne, the less the likelihood of an accident, except that the statistical chance of a mid-air collision is increased. H shows that the possibility of having a substantial accident during the launch or landing has not changed much over the last five years. However, if this is related to the increased number of launches over the same period, it would appear that the results are not entirely unsatisfactory, particularly as glider design over the same period has become markedly more complicated, with attendant training problems.

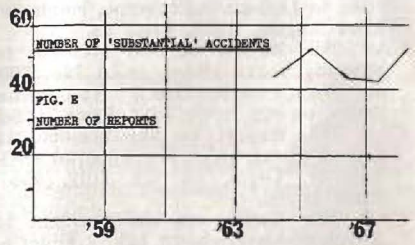
Graphs G and J (hours and launches per report) are really a measure of efficiency. G reflects the movement's efficiency at staying up, obviously due to better soaring techniques and better gliders. J does have a very slight trend towards improvement but shows that our take-off and landing techniques are not really keeping pace with the better gliders and increased soaring ability. A way must be found to update training techniques and training equipment, so that too wide a gap does not appear between these and the increasingly sophisticated equipment at the top end.

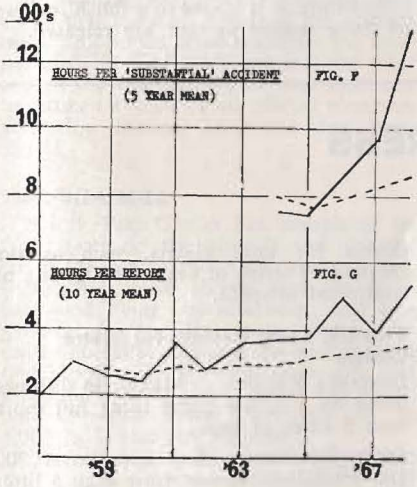


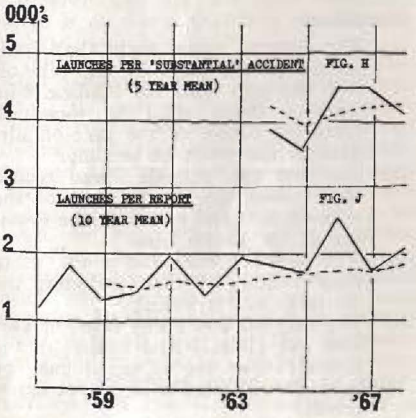














Safety Publicity

The dissemination of Safety Information to Club members has always been a difficult problem for the BGA. At the moment, most of the available information is aimed at CFI's, Full Instructors and Safety Officers. The time has come for us to aim at a wider field; initially through the medium of posters.

The photograph shown here, from Philip Hutchings (Safety Officer, RAFGSA Bannerdown), shows how effective a good display can be. The Safety Panel would like photographs from Clubs with similar "Safety Corners", and also poster designs or ideas for consideration. The main criteria are that they should be applicable to gliding, eye-catching and simple to reproduce.

BoT Civil Aircraft Accident Reports

It may not be generally known that, from time to time, the Board of Trade publishes reports on accidents to gliders. These reports are the result of a very thorough examination of a particular accident by a trained accident investigator. They are well worth reading, as many items emerge from the reports

which are of real value in Club gliding activities. It must be understood that the BoT do not publish reports on every accident, even the fatals, and that some of the comments may be considered to be slightly controversial, when applied purely to gliding. This does not matter, as long as these points are made, they can be fully discussed, and the appropriate lessons learnt.

They are available from Her Majesty's Stationery Office, or through any bookseller. The titles and prices of the most recent follow:

CAP 282. Report on the accident to Slingsby Swallow glider, BGA No. 1046, at Lasham Aerodrome, Hants, on 22nd August, 1966. Price 2s.

CAP 299. Report on the accident to Slingsby T-21B glider, BGA No. 700, at Weston-on-the-Green Aerodrome, Oxon, on 9th April, 1967. Price 2s. 6d.

CAP 298. Report on the accident to Bocian glider, BGA No. 1366, at RAF Bicester, Oxon, on 4th July, 1967. Price 2s. 6d.

CAP 309. Report on the accident to Kranich-Messerschmitt Mk. 2 glider at Walney Island Aerodrome, Lancashire, on 23rd July, 1967. Price 2s. 3d.

In future, it is hoped to publish reviews of these reports as they are released.

MOTOR GLIDER PROGRESS

By ANN WELCH

THE BGA Executive Committee has approved the setting up of two UK Local Records for motor gliders. This is in accordance with the Commission Internationale Vol à Voile (formerly CVSM) policy to encourage motor gliders in this way, quite apart from the question of their use for pure glider records.

The purpose of these records is twofold; to help push up the performance of single-seater self-launching gliders, and to provide some challenging flying for pilots of motor gliders. In both cases, the record attempt starts with the take-off roll, which will require some careful met. assessment for the speed flight.

In the air the engine can be used in any way that the pilot wishes. As an indication of what this means, the K-14 with the Hirth motor could either have a straightforward take-off and climb to about 8,000 ft., or go to 2,000 ft., and thereafter have three "escapes" before running out of fuel.

Though the soaring purist may look at these new records with a faint frown, it should be remembered that some people live in funny shaped countries or are restricted in their thermalling by extensive controlled airspace. In these situations those 5 litres may well enable enjoyable soaring flights to be made over regions previously found to be impracticable for pure gliders, such as the crossing of strips of sea, or traversing of controlled airspace.

Two UK Local Records for Motor Gliders

DISTANCE RECORD:— Maximum distance flown by a motor glider using not more than 5 litres of fuel.

SPEED RECORD:— Best speed over 300 km. triangle using not more than 5 litres of fuel.

Conditions

(a) The distance record flight shall commence at the start of the take-off roll and end with the landing. The distance flown shall be measured from the centre of the take-off airfield to the point of landing.

(b) The 300 km. triangle speed record shall commence at the start of the take-off roll and end with the crossing of the Finish Line.

(c) The aircraft may not carry more than 5 litres of fuel (including the oil in petroil systems).

(d) The take-off and climb must be carried out entirely and solely by the aircraft's own motor, which may be subsequently used as the pilot determines.

(e) There shall be separate classes for single-seaters (including two-seaters flown solo) and two-seaters.

Control of Flights

Attempts on these records shall be carried out in accordance with the *Code Sportif* requirements for record and badge flights for gliders. This means that photographic evidence of turn points is permissible, and that the distance flight may be made either straight, along a broken line of not more than two legs, or over a triangular course.

In addition, the official observer shall check that the fuel system of the aircraft has been drained, shall supervise the fueling of 5 litres of fuel, and seal the filler cap of the fuel tank. This seal shall not be broken except by an official observer, after the landing certificate has been signed.

* * *

THE BGA K-14

No. 1 Test Group has completed its flight tests on the aircraft and submitted its report to the ARB. As expected, these trials have shown that the K-14 has good flying characteristics, and is a genuine and excellent motor glider. One most impressive aspect is the performance under power. In no wind from soft, wet grass the take-off run is about 130 yards, and the time from start of roll to 5,000 ft. is just ten minutes.

Once the motor has been stopped and the airscrew feathered, the K-14 flies just like a glider, and although the performance has not yet been measured, there is no doubt that it is very reasonable.

Possibly because the engine is somewhat inflexible, there is a natural tendency to look on the K-14 as a glider with a built-in launching mechanism and not as a "little aeroplane". This impression is imposed mainly by the ground handling characteristics. Since the aircraft cannot be taxied effectively, it has to be taken out on to the field like a glider, and "launched" from there. There is a tendency to consider ingenious wingtip skids and steerable tail wheels; to want a more flexible engine, and to provide other aids to overcome the shortcomings; and there is no real reason why such modifications could not be incorporated and the K-14 converted to a perfectly satisfactory aeroplane. However, in the present state of the art, the inevitable consequence would be for the machine to finish up as a much less satisfactory glider. Those who have flown the aircraft consider that as it now stands it is a very clever compromise because, above all, it still is a good glider, and this is the object of the exercise.

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* * *

AIRWORTHINESS OF MOTOR GLIDERS

The policy of the BGA is to attempt to persuade the Board of Trade that motor gliders, as defined by the Motor Glider Committee, are simply gliders which happen to contain their own means of launching and should therefore be treated as gliders for the purposes of licencing, certification, etc.

This is the ultimate aim, but it may be difficult to achieve in the immediate future on account of legal difficulties. In the meantime, various negotiations with the ARB and the BoT are in hand. So far as airworthiness is concerned, it seems likely that the main channel for the granting of Permits to Fly or C's. of A.

will be by a recommendation from the BGA Technical Committee to the ARB and then to the BoT.

Potential purchasers of motor gliders should, in the first instance, ask the advice of the BGA Technical Committee.

The Technical Committee has also set up a Motor Glider Engine sub-committee to consider such matters as approval of engine inspectors.

F. G. IRVING

BGA NEWS

Executive Committee of Management

In accordance with the new Constitution, the undermentioned were elected at the AGM held at Harrogate on the 25th January:

P. M. Scott (Chairman)
C. R. Simpson (Vice-Chairman)
Joan Cloke
J. J. Ellis
A. W. Gough
J. E. G. Harwood
D. H. G. Ince
J. C. Large
R. A. Neaves
J. C. Riddell
Ann Welch
K. G. Wilkinson

At their first meeting, on the 12th February, F. G. Irving and T. S. Zealley were co-opted to serve on the Committee.

Development Officer

On 1st March Colonel Naomi Christy takes up the new appointment of BGA Development Officer.

Naomi is well known to many glider pilots, having been a member of six different gliding clubs, a member of Council for four years and, since retiring from the Army, has been working voluntarily at the BGA for the last nine months sorting out the paper-work of Silver, Gold and Diamond claims.

When the Army posted her to Chester, her first reaction was not concerned with her duties, but was "slap in the middle of the Manchester Control Zone, what are the hopes of gliding?" This seems to bear out her description of herself as a gliding fanatic. During her nine years of gliding she has qualified as a full rated instructor and a tug pilot.



Lt. Col. Naomi Christy

The post of Development Officer is a new one. It will be concerned with consolidating and making plans for expansion and development in the future.

Naomi plans to visit as many clubs as possible to learn of their difficulties and complaints and to collect suggestions and ideas for helping the whole gliding movement. She will act as liaison officer between clubs and the BGA, various ministry departments, sports councils and local authorities, and will be closely involved in the preparation of a Five Year Plan for Gliding for submission to the Department of Education and Science.

When visiting clubs she will be seeking information, and hopes very much that everyone will help her in the challenging task she has taken on. She says she has a great deal to learn, and the willing co-operation of everyone is essential.

National Coach

Bill Scull started his duties as National Coach on the 17th February. As ex-CFI of Lasham, he is already well known to the many people who have visited Lasham over the past two years. Bill started his gliding career at the age of 20 with the Avro Gliding Club in 1954 and since that time has flown and instructed at a good many clubs all over the country.

Apart from his 800 hours on gliders, he also holds a current PPL with FI rating and in his "spare time" likes to instruct on aeroplanes, on which he has logged another 700 hours.



Bill Scull

During his days as a private owner, Bill's wife, Yvonne, became a fully trained trailer driver, but at present her time is occupied with looking after their first baby.

We know that everyone will wish to join us in wishing Bill success on his appointment.

Unauthorised Landings at Service Airfields

A strong complaint was made to the Board of Trade by the RAF at the end of 1968 about unauthorised glider landings at RAF airfields. The BoT invited the BGA to take steps to ensure that there is no repetition in future.

As everyone knows, the BGA goes to great lengths to ensure that gliding has a good name with the BoT for being an extremely responsible body, keen and able to sustain a satisfactory level of self-discipline among its members.

The fact that the RAF has had to complain at all does not help our image; however, if we are now seen to be taking action to ensure there is no repetition it will go some way at least towards restoring our good name.

The legal position is that all Service airfields are PPO (Prior Permission Only) and thus a landing made without adequate reason could lead to a civil charge and fine. **Force majeure** alone would probably not be an adequate defence.

The practical position is that Service airfields and their Aerodrome Traffic Zones should be scrupulously avoided on all occasions other than a genuine emergency. There are, of course, a few fields where it may be possible to arrive unannounced but it behoves any pilot to be personally sure this is so before he lands.

If you really do have a genuine emergency and land at a Service airfield then you must approach Air Traffic Control in a suitably apologetic frame of mind, explaining that there was nowhere you wanted to land less than at the field but it became essential due to . . .

Obviously, therefore, a Service airfield should never be declared as a goal or even as a turning point unless this has been fully cleared with the airfield in question. All task setters please note, and individual pilots setting private tasks as well.

NOTAMs for Gliding Contests

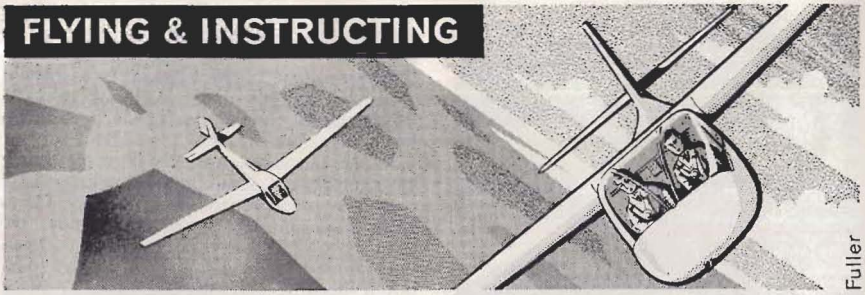
Since late 1967, the BGA has been negotiating with the NATCS (National Air Traffic Control Services) with a view to co-ordinating gliding contests as far as possible with other aeronautical events, and also to ensure that other users of the air know of the gliding events. In 1968 it was arranged for NATCS to issue NOTAMs for all contests notified to the BGA, thus ensuring that all airspace users were informed a few weeks before each gliding contest.

NATCS have now set up a method for long-term co-ordination of air events, flypasts, etc., and a member of the BGA Flying Sub-Committee is responsible for keeping them informed of the details of forthcoming contests. The 1969 contests were notified to NATCS in December, 1968, and two possible conflicts with other events have been resolved. In dealing with other air events, NATCS will take steps to arrange that the immediate locality of our contest sites is avoided.

Any queries or requests for NOTAMs for other events, such as task weeks, etc., should be addressed to the BGA for the attention of the Flying Sub-Committee NOTAM Member.

Note that it is the Flying Sub-Committee who deal with NATCS on this particular aspect but that airspace problems continue to be dealt with by the Airspace Sub-Committee.

FLYING & INSTRUCTING



The following piece is taken from an early edition of "Instructor". My reasons for wanting the world at large to read it is that there is still much room for improvement in the approach and landing accident rate. I am convinced that a pilot who has his mount completely under his control, and this means properly trimmed, is much better fitted to deal with the problems involving brain power.

Teaching the use of the Trimmer

That little lever on the right hand side of the cockpit — what's it for? Is it just another nuisance to be mastered, or a useful control that will repay with interest time spent in learning how to use it? There is no doubt of the answer if one asks a pilot who has been trained properly. "The elevator trimmer has been put there at no little expense to ease the pilot's task and enable him to devote more attention to what is going on outside the glider, to map read, to operate his calculator, to have lunch, etc."

Consider the case of the inexperienced pilot on the base leg of his circuit. He knows that in the prevailing conditions he will need 55 knots on his final approach. Accordingly he stuffs the nose down and gets somewhere near the required speed. He is now holding a push force on the stick to maintain the new speed. He does not retrim, either because he has never been taught or because he can't be bothered. Out of the corner of his eye, he sees a retrieve crew pushing a glider across his proposed landing run. He wonders what to do and forgets to hold the push force on the stick. By the time the lack of noise has penetrated his overworked brain, the glider is doing 35 knots and there is no hope of regaining speed or perhaps even reaching the airfield in the steep wind gradient. Another statistic for the Safety Panel.

The well trained pilot in these conditions will have retrimmed to 55 knots and will know that, short of the tail falling off, he will not have to bother too much about his speed and can concentrate on the rest of the approach problems. He will be much more likely, in the fullness of time, to become a retired glider pilot.

There is no doubt about the fact that the average glider pilot is loth to use the trimmer. This has been proved to me, by the number of them I have trained to fly light aeroplanes, in which the trimmer is of utmost importance. Without exception all these pilots have had to be taught the use of the trimmer from first principles. A disturbing fact.

How has this situation come about? Well, most elementary two-seaters do not have an elevator trimmer, so the average pupil has either had to work things out for himself (very often badly) or if he has been lucky enough to be trained in a trim-equipped two-seater, the instructor has not known the correct way to cope with instruction in the use of the thing.

The purpose of this article, then, is to give instructors the necessary knowledge to teach the use of the trimmer or to brief solo pilots where the two-seater in use is not so equipped. It will be assumed that we are dealing with a two-seater with trim and it will be left to my undoubtedly intelligent readers to adapt this for solo briefing.

Trim instruction should start with the effects of controls exercises in order to get the pupil in the correct frame of mind

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right from the beginning. Its use should have been explained in an elementary manner when the pupil was shown round a glider and it must be stressed that it is there for the pilot's benefit and is not just a nuisance.

In flight, the aircraft should be trimmed to normal flying speed by the instructor. The pupil should then be told to maintain this attitude while the instructor moves the trim lever forward. The pupil will be told to expect an increasing back pressure on the stick to maintain the attitude. When the trimmer is fully forward, get the pupil to pull it back until all the stick force disappears. Check that this has happened by asking the pupil to release the stick. A loop or bunt will indicate a certain lack of sensitivity in the pupil at this stage. Never mind, try again.

Repeat the exercise by trimming to a high speed and getting the pupil to hold attitude while the trim lever is pulled back. Again, make him push the trimmer forward until the stick force is removed.

The next step is to teach how to change the speed and to retrim. As with all things involving speed, attitude is all important. It cannot be too highly stressed that in order to trim to a new speed, the attitude must be kept constant while the trimmer is being used. If the attitude changes, then the datum changes and you cannot trim to a moving datum. The procedure, then, is as follows :—

To change SPEED, first select a new ATTITUDE. Hold it and wait for the SPEED to settle. Adjust the ATTITUDE if the SPEED is not correct. When the SPEED is correct hold the ATTITUDE and RETRIM. The secret, then, is the magic formula ATTITUDE — SPEED — TRIM. *Never* move the trimmer at all until the aircraft has settled at the desired speed.

It is only natural that the pupil will take some time to be able to do this instinctively. Therefore the instructor should always allow plenty of time for the pupil to trim properly. This means, for instance, that the speed must be increased very early on the base leg to give the pupil a chance.

Having got to the stage when the pupil is able to trim at the request of the instructor, he should then be expected to retrim without prompting whenever a speed change is required. To bring this home, it is a very good plan to ask the pupil to hold his hands above his head at odd intervals throughout the flight. The resulting gyrations will serve to make him more trim conscious.

All this may seem a lot of trouble for a little lever, but there is no arguing the fact that a pilot who always keeps his aircraft trimmed is safer, more relaxed and far more likely to be able to enjoy his sandwiches. Anyway, try it and see.

ROGER NEAVES

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AGM AT HARROGATE

Photographs by KEITH MASSEY AND LAURENCE HILL



▲ Paul Thompson receiving the de Havilland Height Trophy from Lady Masham, who presented the prizes.

▼ Peter Scott listening to the pipes as the Haggis is served to the Lady Mayoress of Harrogate.





▲ The President speaks.



▲ Awaiting luncheon.



▲ L. to R.: Don Westerside, Queeny Meads, Mrs. Westerside, Godfrey Harwood and Basil Meads.

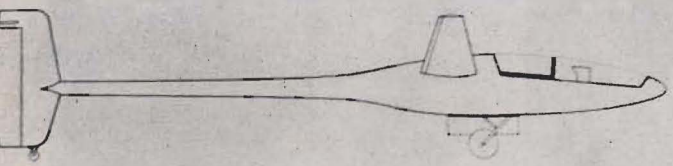
▼ The Sherry Party was well attended.



▼ Checking the Executive Committee votes.



SIGMA





By NICHOLAS GOODHART

COMMUNICATION in the gliding world is curiously uncertain. For the most part one gets to hear about gliding affairs the world over through the various journals that either include gliding matters or are wholly devoted to it. But sometimes no information seems to filter through and quite suddenly one hears of (or even sees) brand new designs or developments months or even years late. Of course, this may be intentional but, quite often, I suspect, it is more due to the fact that no one has had time to put pen to paper, or maybe thought there was no sufficient firm information.

In the particular case of Sigma all these forces have been active and very little has so far been published. However, the recent visit by the Duke of Edinburgh to Slingsby Aircraft Co. made it necessary to gather together a good deal of Sigma information and this makes a convenient opportunity to let those interested know what it is all about.

Sigma is designed to provide the British entry at the 1970 World Championships at Marfa with an Open Class glider having the highest probability of winning the Championships. At this point everyone always says that, of course, winning a Championship is not all performance; there are many other important aspects such as comfort, rigability, good handling, ease of repair, etc.; there is no doubt this is true but, and it is a very big but, no amount of these virtues will compensate for an inadequate performance. So this article is about the development of Sigma as a high performance glider. We have, of course, had to think, too, about the other virtues, but we shall not know whether we have paid enough attention to them until the flight trials start.

Sigma's genesis really lies in the basic analysis of cross-country thermal flying. The work of Dick Scorer, Betsy Woodward and others demonstrated that thermals were not simply patches of rising air but had an internal structure which caused the lift to increase as one got nearer the centre. This factor immediately puts a high premium on low circling speed and explains the fact (now so obvious) that gliders with high circling speeds, however low their minimum sink may be, fly in the weaker, outer parts of thermals and are consequently poor climbers.

The first requirement for Sigma is therefore a low circling speed and a reasonably low minimum sink to go with it. Only in this way can one be sure of competing successfully on the bad days or climbing out of the inevitable hole that crops up all too often in competition flying. With this in mind, we set as a minimum acceptable standard the minimum sink performance of a Skylark 3, i.e. 1.2 knots sink at 37.5 knots EAS.

The second part of the thermal cross-country technique is the straight glide between thermals. The overall average speed achieved depends on the speed at which the glide is made and the height lost in the process. The requirement, therefore, is the best possible glide ratio at the highest possible speed.

One can summarise what is involved in meeting the requirements of these two cases as follows:

Climb	Cruise
High lift coefficient	Low lift coefficient
Large wing area	Low wing area
Low weight	High weight
Low drag	Low drag

Low drag is a requirement in both cases (surprise! surprise!) and becomes the main consideration for the fuselage and tail surfaces. Weight, on the other hand, needs to be high for cruise and

low for climb; however, we did not have any bright ideas for solving this problem.

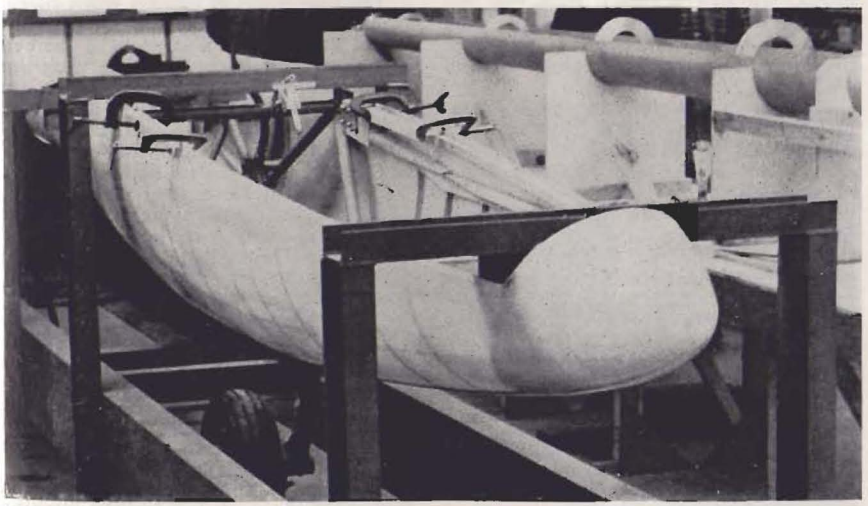
We were therefore left with the problem of developing a wing giving a high lift coefficient with large area for climbing but capable of the maximum possible reduction of area for cruise at low lift coefficient; in both configurations, drag figures had to be very low, i.e. extensive laminar flow must be achieved.

Fortunately, Dr. F. X. Wortmann was extremely interested in the concept of a wing capable of operating in these two modes, and undertook to design a wing section, or rather a pair of wing sections, for Sigma. It remained for John Sellars, as Chief Designer of Sigma, to engineer a flap system able to achieve these two wing sections. That, in a nutshell, is what Sigma is all about. The wing section is capable of operating with reduced area (i.e. flap in) and a good low drag bucket in the range of cruising C_L's (say, 0.1 to 0.8) but is also capable of operating at very high C_L with increased area (flap out) for circling.

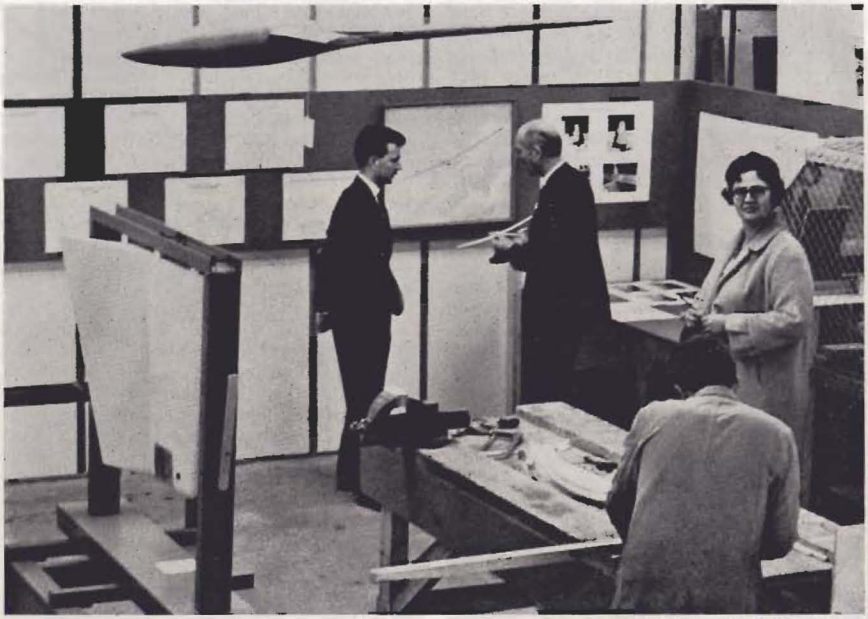
Having got the basic concept sorted out, the next step was to do a study of the major parameters—wing span, wing area, weight—in order to find the effect of varying these items on the calculated performance. This study was done at Hawker Siddeley Aviation, Brough, who very kindly provided both computer time and an aerodynamicist (Neville Beckett) for the study. Neville Beckett has, in fact, been responsible to John Sellars for the aerodynamic aspects of the design from the parametric studies onwards.

The results of the parametric study showed that wing loading needs to be very high by gliding standards—of the order of 10 lbs./sq. ft. (flap in), that weight should be high (1,200-1,600 lbs. depending on thermal strength) and that wing span should be as high as possible.

The design of Sigma that has emerged is therefore of large span (21 m.) and heavy (flying weight 1,250-1,300 lbs.). Calculated performance shows that we have held to our basic requirement of circling performance better than a Skylark 3 with a minimum sink of 1.07 knots at 37.5 knots. However, the really exciting part of the performance is achieved in the cruise configuration. Our calculations show 50:1 glide ratio at 56 knots and 32:1 at 100 knots. Perhaps it should be added that the method of calculation we use gives, when applied to existing gliders, performance figures which appear to correspond closely with their real performance. In other



The front fuselage with undercarriage showing.



The informative Sigma data display prepared for Prince Philip's inspection. Note wind-tunnel model at top.

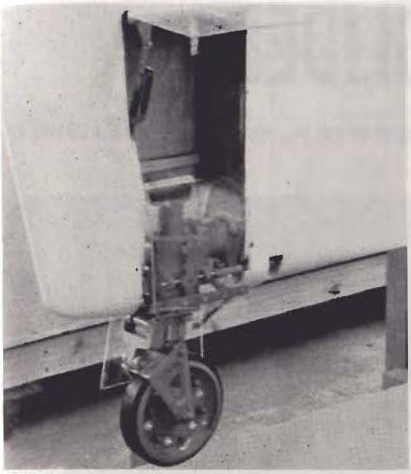
words, we like to think it is not too starry-eyed! I am sure Holighaus would agree, since the same method applied to the Nimbus gives a best glide ratio of 46:1.

Having settled on the basic parameters, many of the main features of the design then followed almost automatically. The first item was the wing material. With the large span and high wing loading, the wing chord, and hence the span depth, is small. Even if the wing were made of solid GRP (glass reinforced plastic) it would have such a low stiffness that the wing flexure would be unacceptably high. Exotics like titanium and carbon fibre reinforced materials are attractive but impossibly expensive and, in the case of carbon fibres, the technology of their use has yet to be fully developed. Only aluminium alloy meets the requirement of being stiff enough, of adequate specific strength and having a fully developed technology; Sigma's wing is therefore primarily made of aluminium alloy.

The next point of interest is the height of the fuselage off the ground with the wheel down. With a large span there is a problem in ensuring that the wing tips have satisfactory ground clearance for safe field landings. If this is done with dihedral, the flight dihedral can be excessive due to the amount of wing bending between static and flight cases. We therefore went for a long undercarriage extension. Incidentally, the undercarriage (main and tail) has been built and donated by Dowty-Rotol Ltd.

Due to the effective change of wing incidence when the flap is out, the fuselage attitude on landing and take-off is almost the same as in cruising flight. This means that the tail wheel has to be some feet below the rear end of the fuselage, hence the fact that nearly half the fin is below the fuselage where it provides a convenient mounting place for the retractable tailwheel.

That then is an outline of what Sigma is going to be and, but for the Slingsby fire, we would have been able to show



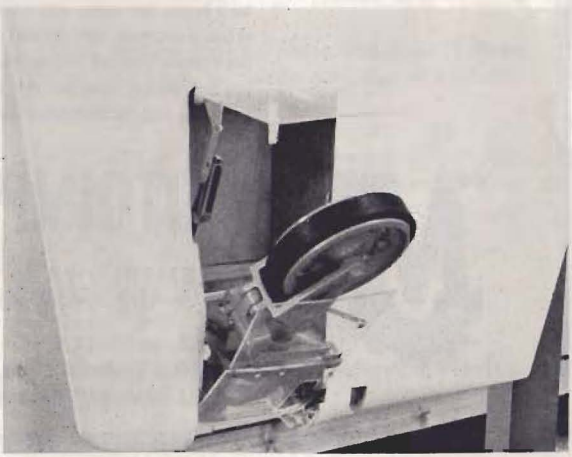
Photographs by Neville Beckett.

the Duke of Edinburgh, on his visit to Slingsby's, a nearly-completed first prototype. Instead, we were only able to show him the beginnings of the new fuselage and the rest of the features of the design had to be displayed in model form. However, re-design and re-build are now getting going strongly, and we hope to fly in September, 1969.

There are, of course, many other points in detail about the design which are not covered in this article. The aim is simply to give the broad outline at this time, to be followed later in the year by details of the many novel features involved in the concept.

There is also the question of how much change in technique will be involved in flying Sigma, bearing in mind that cruising speeds will be in the bracket 80-120 knots (flaps in). Another interesting point is that min. sink with flaps in is almost exactly the same as with flaps out; the difference lies in the speeds for min. sink which are 54 knots and 37.5 knots respectively. Thus the flaps serve only for the essential purpose of reducing the turn radius for thermalling.

As can be guessed the development of a glider of the size, complexity and sophistication of Sigma is far from cheap, though, unlike some aviation projects, the estimated cost of building one prototype still remains within the figure (£30,000 at 1966 prices) put forward when the project was started. Due to the splendid support given by the aviation industry and others, in particular WD & HO Wills, sufficient finance is now available for building one prototype. However, it has been decided that a strong case exists for building a second prototype and fund raising continues in order to provide for this. At present, we estimate that a further £9,000 is required.



The tail-wheel assembly was well displayed in a mock-up underfin. It is a sprung, steerable, solid-tyred wheel with full castoring after break-out from steering. The method of retraction can be clearly seen.

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THE KRONFELD CLUB

OUR new chairman, Commander John Stanley, is encouraging us all to get down to work, and redecoration of the bar and lounge has started. The Lecture Room continues to be let during the day to the Davis School of English, whose headquarters are just around the corner in Eccleston Square. For the time being, the club will normally be open Mondays to Thursdays 6 p.m.-11 p.m., but we are trying to revert to weekly lectures on Wednesdays.

On the third Wednesday in each month the Aviation Society of London will be having their monthly lecture, but Kronfeld members will be welcome to attend as seating permits. Their programme will be posted on the notice board.

The Art Society will also be having their bi-monthly meetings on Wednesdays and on these occasions they will provide the lecturer, again all will be welcome. The first lecture is entitled "Grand Prix Motor Racing" — as seen through the eyes of artist Michael Turner. A founder-member of the Society, Michael Turner is widely known for his motor racing paintings, a number of which were reproduced recently in "Motor". He has visited most of the European circuits accompanying the champions, and his talk, with slides, should be interesting.

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Diary of Lectures and Film Shows
Wednesdays at 8 p.m.

Mar. 26. The History of Miles Aircraft Ltd., by D. L. Brown.
April 2. Powered Gliders, by Derek Piggott.
„ 9. "October Wings". Film show by Soviet Embassy.
„ 23. ". . . And every one a Downwind Landing" — London Balloon Club.
„ 30. An artist looks at "Grand Prix Motor Racing". Michael Turner.
May 7. Powerboat Racing.
„ 14. Air Law — Peter Martin.
„ 28. Light Aircraft Accident Investigation.

AVIATION ART SOCIETY

THE Society continues to go from strength to strength. There will be a large exhibition of members' work at the Biggin Hill Air Fair from the 15th-18th May. Anyone who would like to help at this, in exchange for free Fair admission tickets, should get in touch with Mrs. Bonham.

It is planned to exhibit a special collection of pictures of trans-atlantic flight subjects in the vicinity of the Post Office Tower at the time of the Daily Mail Air Race in May.

An increasing number of paintings of all subjects are being exported to America and it is possibly not widely known that the Society can arrange private commissions at similar prices to those shown in current catalogues.

Details of exhibitions and membership, etc. may be obtained from the Hon. Secretary, Mrs. Bonham, 11 Great Spilmans, Dulwich, S.E.22. Tel. 01-693 3033.

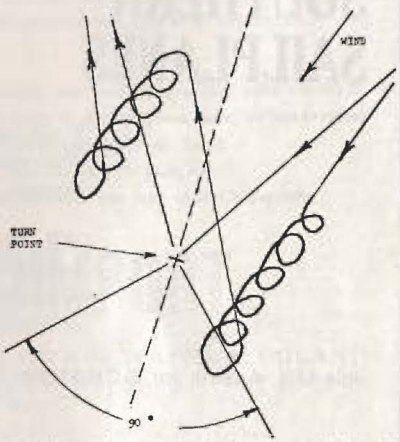
Y. C. B.

TIP FOR THE TURN POINT

By HAROLD DREW

ALL competition pilots are now familiar with BGA rule number 18 on rounding turn points. (See Competitor's Handbook, April, 1968.) The nub of this rule is that the pilot is no longer required to round the mark in the yacht racing sense. So long as he can take his photo from within the prescribed unlimited quadrant or be observed in the limited quadrant applicable to observed turns, he is free to head out for the next turn point or goal or along the next set line.

It is, of course, essential to be certain that you are in the quadrant when you take your photo or assume that you have been observed. On the other hand, much time can sometimes be squandered by insisting on taking the photo or being observed right in the centre of the quadrant. Imagine the situation shown in the first sketch. A pilot is drifting down towards the quadrant and is near the top of a weak thermal. As soon as he has crossed into the quadrant, he takes his photo and scoots for a good looking thermal which lies in the direction of the next turn point, goal or next set line. He would be foolish to allow himself to

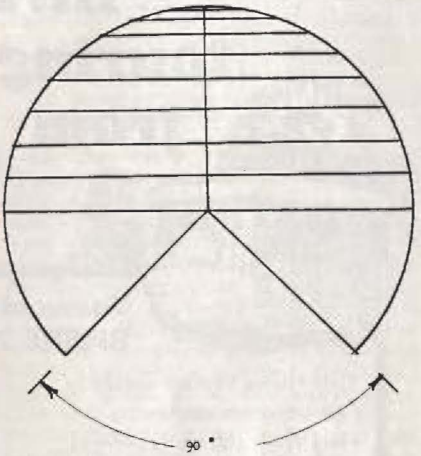


drift further down wind into the quadrant before taking his photo and making his turn.

I believe that few pilots bother to mark the quadrants on their maps, perhaps because this involves a troublesome construction difficult to execute quickly. The difficulty may be greatly reduced by the use of the template shown in the second sketch.

The template is best cut from transparent plastic. With the pencil tip spotted on the turn point, slide the template so that the pencil tip engages the notch. Now orient the template so that the chords engraved on it intersect symmetrically the two legs which converge at the turn point. Then pencil in the quadrant and ring obvious landmarks lying close to the limits of the quadrant or memorise them.

It should be remembered that the BGA turn point rule is not valid for all international events or for records.



SOUTH AFRICAN NATIONALS

By B. PAUTZ

DETERMINATION, doggedness, a consistency of style and temperament and—above all—a piloting skill obviously well-honed by a great deal of practice all contributed towards Heini Heiriss, of Kelkom, winning the 1968-1969 South African Championships,, which were held at Tempe airfield, Bloemfontein.

Out of 7 championship tasks, Heiriss flew his ASW-12 into first place four times. He was 5th twice running, and 3rd once, ending with a score of 6,627 points.

Second place was filled by Tim Biggs, of Johannesburg, who accumulated 6,336 points in his 15m Libelle with retractable wheel (Libelle 15R). Third place, with 6,162 points, was taken by veteran South African soaring pilot Boet Dommisse, of Pretoria, in his BS-1.

Because Heiriss is a German National residing in South Africa, he becomes the Open Champion only, and Biggs, the highest rated SA pilot, becomes National Champion.

The competition had two striking features: First, the inability of Pat Beatty's fantastic new super-sailplane, the BJ-4, to offer truly significant competition because of its unfinished state and irritating teething troubles. (It made its first flight the day before the first championship task.) And, secondly, the emergence from the ruck of a new generation of determined competition pilots with their eyes and ambitions fixed on the No. 1 position.

Heiriss and Biggs, who both took leading positions for the first time in their competition careers, have been pushing into the top echelon for the last 10 years. Cole and Martin emerged as meaningful opponents in the last 2 to 3 years. Cole's Libelle 15R was much superior to the sailplanes which he had to fly in past contests, and the improvement in his status and rating was immediately noticeable.

Doodling around with graph paper and trying to draw inferences from trends indicates that Heiriss was indeed a true winner. One prediction curve shows that his performance level was inferior to Dommisse's for the first three

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tasks and then, probably in response to the challenge, he elevated his attainment level above Dommisse's and maintained it steadily until the winning end.

Dommisse's attainment curve shows an astonishing consistency, remaining virtually unchanged for five tasks and then plummeting sadly, possibly as weariness and other factors, including poor weather and a late start on the last task, made themselves felt. Biggs, Cole and Martin demonstrate attainment levels which escalated approximately linearly daily.

Further doodling suggests that there was little difference, statistically speaking, in the overall performance of Biggs and Cole. In fact, if their points are factorised, both return an identical figure of 1.41 compared to Heiriss's 1.00. Dommisse's 1.33 and Martin's 2.00. The inference is that the top pilots are: 1. Heiriss, 2. Dommisse, 3. Biggs and Cole, 4. Martin. But this rating list was compiled without taking into account such formidable competitors as "Bomber" Jackson and Bobby Clifford, who did not compete, and Pat Beatty, who had problems with an untried sailplane and was not true to form.

Another feature of the event was that the championship's tasks were alternated with free-for-all "competition" days when a task was set and thrown open to all-comers on a handicap basis, allowing crew members, syndicate owners and itinerant pilots to enjoy a competition flight with the possibility of winning a case of beer—a highly acceptable commodity in Bloemfontein, where temperatures hovered around 35° centigrade.

All Standard Class sailplanes flew the same tasks as the Open Class.

1st Day—29th Dec.:— A 300-km. Triangle. This was a fairly easy day, with 16-21 knots of tailwind on the return leg and mainly blue thermals. The lapse rate was 3° to 12,000 ft. Of 23 starters, 19 returned. Alf Warminger, the popular visiting pilot from the UK, accompanied by another Britisher, resident in SA, Richard Tucker, of Johannesburg, flew the course in a 2-32 to establish (if confirmed) a new British National two-seat record at ca. 72.3 km/h. Brian Cole took off on the task after a monumental drive from Walvis Bay with the Libelle 15R in trail. The hot, dusty journey took him 48 hours non-stop, except for three hours' sleep immediately before take-off.

Leading Results		*km/h*	*Pts.*
Heiriss	ASW-12	106.5	1000
Dommisse	BS-1	106.0	997
Beatty	BJ-4	103.0	960
Pearson	Cirrus	?	917
Biggs	Libelle 15R	?	832



The winners, L. to R.: Adrian Martin, Dick Gonlag, Tim Biggs and Heinie Heiriss.



Ted Rudnick polishing his canopy.
(Photo by Alf Warminger.)

2nd Day—31st Dec.:— Goal and Return flight of 180 km. The weather appeared to be so unpromising for soaring that a go/no-go decision was postponed until noon when all sailplanes were assembled on the grid. A go decision was taken but the first five pilots launched promptly fell down. At 2 p.m., however, the weather improved and of 22 starters 20 completed the task. Beatty in the BJ-4 took 32 minutes to return for the turn point—an average speed of nearly 169 km./h.

Leading Results		*km/h*	*Pts.*
Beatty	BJ-4	108.8	1000
Cole	Libelle 15R	98.7	878
Dommisse	BS-1	96.8	852

3rd Day—2nd Jan.:— A 330-km. Triangle was set on a promising forecast with a 3° lapse rate to 19,000 ft. predicted. In fact, the conditions turned out to be quite poor, and only seven pilots completed the task. Pat Beatty had to abandon the task when the electrics of the one-and-only variometer on board failed because of the heat and could not be repaired.

Leading Results		*km/h*	*Pts.*
Biggs	Libelle 15R	117.8	1000
Dommisse	BS-1	94.4	906
Andrews	Ka-6E	86.1	872
Cole	Libelle 15R		871
Heiriss	ASW-12		866

4th Day—4th Jan.:— Goal and Return of 362 km. Unstable air and the threat of thunderstorms on the return leg was promised by the weather men. Warminger and Tucker in the 2-32 completed the task to break the British National two-seater record. All but 4 pilots completed the course, including Dennis Butler and Alan Alchin, of Port Elizabeth, who returned to Tempe for the first time.

Leading Results		*km/h*	*Pts.*
Heiriss	ASW-12	105.8	1000
Biggs	Libelle 15R	103.1	971
Dommisse	BS-1	96.8	898

5th Day—6th Jan.:— 111.5-km. Triangle. Seven octas of cirrus gave promise of a poor day, but with a possible improvement later. Lethargy gripped the contestants and no one seemed keen to start. Those who had early take-offs fell down. Suddenly, at 2 p.m., the sky began to "cook" and all scrambled to start and get away. Some pilots managed to complete the course twice.

Leading Results		*km/h*	*Pts.*
Cole	Libelle 15R	92.0	1000
Dommisse	BS-1	89.7	976
Heiriss	ASW-12	86.1	937
Biggs	Libelle 15R		914
Beatty	BJ-4		866

6th Day—8th Jan.:—Goal and Return of 220 km. The weather forecast offered virtually no wind, a lapse rate of 3° to 12,000 ft. and possible overdevelopment in the afternoon. 17 pilots completed the course.

Leading Results		*km/h*	*Pts.*
Heiriss	ASW-12	107.1	1000
Cole	Libelle 15R	97.6	898
Martin	SHK 15	93.8	857
Dommisse	BS-1		846
Beatty	BJ-4		844

7th Day—10th Jan.:— 509-km. Triangle. Thermal development on this day was poor and those who got away early stood the best chance of completing. Boet Dommisse was the last on the start list and limped away at best speed for min. sink.

The radio was humming with reports of low scrapes and gliders staying up

with no visible means of support. At 6 p.m. nobody had returned and there was no radio contact until Chick Brydges arrived overhead in a Fournier motor glider. He acted as "Telstar" and relayed calls to the ground station at base.

Tim Biggs called final glide and he arrived at 6.27 p.m., having taken 6 hrs. 27 mins. Heiriss arrived soon after, floating across the fence to beat Biggs by 9 mins. He was fortunate, because he photographed the wrong turning point and only realised his mistake after he overheard two other pilots arguing about the turn point over the radio. Heiriss returned and photographed the correct point—a move which saved him not only the day but the competition. As daylight faded, Pearson and Martin came home, gliding low, just before 7.30 p.m. All other 19 pilots, including the luckless Dommisse, landed out.

Final Leading Results		1	2	3	4	5	6	7	*Total*
Heiriss	ASW-12	1000	824	866	1000	937	1000	1000	6627
Mouat-Biggs	Libelle 15R	832	842	1000	971	914	784	993	6336
Dommisse	BS-1	997	852	906	898	976	846	687	6162
Cole	Libelle 15R	831	878	871	842	1000	898	746	6066
Martin	Austria SH-2	828	795	597	831	810	857	970	5688
Böttcher	Cirrus	765	686	864	798	841	778	766	5498
Beatty	BJ-4	960	1000	0	789	866	844	687	5146

In the handicapped results Mouat-Biggs was first with 6675 points. Cole second, 6420 points. (Handicap 79% for Libelle 15R.) Heiriss, handicap 70%, third with 6209 points.



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GLIDER IN THE SKY

The Wills film, "Glider in the Sky", for which Ann Welch was scriptwriter and technical director, has been selected by the Central Office of Information to be one of the five British entries for the International Sports Film Festival to be held in March at Cortina d'Ampezzo, Italy.

BLOEMFONTEIN 1968-69

By ALFRED WARMINGER

LEAVING home on Boxing Day savours almost of desertions, and admittedly I felt a bit guilty (only a bit) as I motored through a light snowfall that afternoon en route to Heathrow and a magic carpet VC 10. Next day at 1800 hrs. Bomber Jackson and Peter Rousseau were greeting me at Hertzog Airfield, Bloemfontein's main airport.. On the way to Tempe where the championships were to be held I was brought up to date Comps-wise. I could either share the Phoebus 15 with Peter or fly the two-seat 2-32. Fancy getting a choice! In the event and in my greed it was decided that I would fly the Phoebus 15 on the Competition days and the Schweizer 2-32 on the Championship days. However, the ensuing flying pace was such that I only ever had one task in the Phoebus.

Many old acquaintances were renewed that evening at St. Andrew's School, Bloemfontein, where we were all billeted and fed. Apart from the locals (and I include Brian Cole who had motored non-stop for 1,000 miles with his Libelle from Walvis Bay, S.W. Africa) and the Rhodesians, Neil Galloway and Ron Cossor, with their Vasama, there were Max Vernet, Hans and Inge Böttcher from West Germany and a new face in Jean Dazin from France. Here I met Hugh Keartland, whose two-seater I was to fly, and Richard Tucker, my co-pilot for the Championships.

The pattern of the days, as I had learned from past experience at S.A. Comps, was early to bed, early to rise, breakfast 0730, gliders out of the hangar by 0830, briefing 0930, airborne anytime after 1100 and flying for 4-6 hours, according to the ship's performance and the task. By the time the aircraft was stowed after landing back, and the many after-flight chores attended to, there was usually just enough time for a couple of cans of beer, a swim or shower, and then the second meal of the day, dinner. Keep this up for 12 days out of the 15 days of the Contests (there was a task every day) and you will perhaps appreciate that the three objects of my visit to Bloemfontein, to renew old friendships, to fly, and to lose winter obesity, were fully realised.

The next day, Saturday, 29th December, was a Championship day, so accordingly I got familiarised with the 2-32, and Richard Tucker, in true S.A. style, a 300-km. triangle, Tempe—Stillerus Railway Stop (a hut about 20 by 30 feet with a red roof!), Boshof town centre. This was successfully flown, albeit slowly. The Schweizer is certainly buxom, the front seat armchair-like with elbow rests and a bench type in the rear, capable of taking two not so big adults. A pair of scoop type ventilators ensured cool fresh air, very welcome in the heat of the S.A. summer, and for the first time I managed to escape canopy sunburning.

With an AUW of 1,250 lb. and 15 m. wings she has quite a wing loading, consequently one can't thermal under 55 m.p.h. in smooth lift and 60-65 is best in rough. She handles beautifully, a little out-classed on the climb by the small and nimbler aircraft, but with the nose down the performance is on par with most, in fact on one final glide I came



Hans Böttcher (with pipe) with his wife, Inge, and crew member.

home formating comfortably on Hans Böttcher in his Cirrus. Max. speed, rough air thrown in, is 160 m.p.h., though 140 was fast enough for me.

The next day Richard and I set off on another 300-km. triangle task, this time to Koffiefontein Rail Station and Trompsberg Rail Station. With a better height operating band to 14,000 ft. (9,000 ft. above ground) and a touch of flat cumulus here and there we made much better progress, completing the triangle in 4 hr. 34 min. at a new British National speed of 72.3 km/hr. It should have been faster, but knowing we had it in the bag, we took our time on the final leg and played safe, a thing one should not do, of course, on a speed task; however, human weakness and all that!

Briefing is similar no doubt the world over, but some slight variations on the theme at Tempe are perhaps worth mentioning. After announcement of the task by the Director, Wesley Shields, a diagram sheet was distributed giving all relevant information for that particular task, very useful! The met. was a very short affair and confined mainly to giving details of lapse rates, winds to 18,000 ft., likelihood of storm build-ups, etc. Over such a huge land mass hundreds of miles from the sea, general conditions changed little. Previous days' films and barograph charts were usually remarked upon by Boet Dommisse and woe betide the unfortunate who hadn't produced three clear photographs from the correct angles of the T.P. or whose barograph trace was a marginal 1,000 metres over the startline. After briefing, while pilots sorted out their maps, sealed barographs and cameras, the crews were busy topping up the oxygen, filling water bottles, which every glider carried, usually the half gallon size, washed yesterday's dust off the aircraft before joining the crocodile to the grid. Just before take-off a certain "Rooi Nek" could be seen going through an elaborate Druid-like ceremony, donning long-sleeve shirt, white gloves, Peter the Planter hat and applying vast quantities of Nivea Cream to exposed skin surfaces.

The next red letter day for the Schweizer was 3rd January, when, with Jean Dazin of France up front and yours truly in the rear, she set off on the same 300-km. triangle. Jean flew impeccably, just as if he were back in his Caravelle, with 150-odd passengers instead of one. With an operating height extending to 14,000 ft. and well developed clouds dotting the route we fairly hurtled between the thermals flying often at 110 m.p.h. to escape the S.A. downs. At the commencement of the last leg I was told to work out the actual height lost per 1,000 ft. between two positive landmarks and then to apply this foolproof yardstick to the progress home. With such information, Jean judged a beautiful final glide from 16 miles out to record an overall speed of 79.5 m.p.h. for the triangle, a new French National Record. The next morning both English and French flags flew side by side outside the briefing tent!

January 4th was a Championship day so back to work. Task, the Botha Road Bridge over the Orange River and back, some 181 kilometres to the SSW. Up to now we had kept to a particular area within about 60 miles of Bloemfontein, flat country apart from the Koppies and well sprinkled with farmsteads. This flight would take us well into the rugged and sparsely inhabited Karoo country, but it had its compensations in the unique grandeur of the Orange River and, for the U.K. pair, a crack at the British O/R.

Although it was a race we were more concerned to complete the journey and consequently went through the gate at the early time of 1213 hours. Initial progress was hindered by an inversion reluctant to move up from 8,500 ft. (all heights above ASL, remember) but improvement was sure if slow and by the time were abreast of Trompsberg it was up to 12,000 ft. with cu as lift markers. Soon the Libelles, BS-1, BJ-4, AS-12 and

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Cirri came hurtling past, only the Ka-6's and the Kranich 2 seemed to be sympathetic enough to stay and help out. Reaching the Botha Bridge around 1440 hours and at 9,500 ft. Richard and I took a set of photographs each, just in case. With plenty of gliders coming and going it was no problem to steam back along track, although a couple of times the 2-32 was down to 8,000 ft. and we were picking farms possible for an outlanding. Reaching Edenberg, a township on the Bloem Railway line, it was 48 miles to run and the time 1630 hours, just right for a nice steady play-safe return, arriving over Tempe control at 1724 hours.

The following morning, much to my relief, Hugh Keartland and Brian Stevens took the Schweizer on a mammoth distance for a S. African O/R attempt. Landing on the return leg near Luckhof by the Orange River meant almost a complete night out on the retrieve, but fortunately the next day's Championship task was a 100-km. triangle. Richard and I had about 5 false starts, however, and went round the course twice, so it wasn't such a picnic after all.

The task set for 7th January was a 300-km. triangle; yes, you've guessed it, Koffiefontein—Trompsberg—Tempe, and although I tried hard to emulate a Chameleon, Hugh hunted me down and away we went with Alf in the back seat. This was one of the most dramatic and exhilarating flights I've ever had. On the first leg between 1200 and 1400 hours the weather developed into nicely spaced cu with tops gently growing. On the second the skies had grown menacingly with isolated storms quickly spreading, cutting out the sun and linking into one gigantic "cell" covering tens of square miles. By the time we got to Trompsberg it was a rare old ride dodging between the active cells which were producing lightning and heavy hail; yet there were smooth areas of lift which kept us up at the 10,000 ft. mark. Reaching Edenberg we came to a wall of sand, and hesitated, undecided what to do. I said to Hugh: *"That* dust must be coming up, circle near its edge." "Better still," Hugh replied, "Let's fly along its edge." And at 120 m.p.h. the Schweizer went 30 miles in a straight line on its way home, climbing to 14,500 ft. Hugh eventually using brake to keep out of cloud base. Without diminishing speed we then left the dust wall and dived the remaining 18 miles to Tempe airfield. After landing we barely had time to run the aircraft into the hangar before the storm hit the airfield and within seconds 30-40-knot gusts were blowing.

Friday, 10th January, was the "day of days" that wasn't—except perhaps for pilot endurance. 500-km. triangle. Fourteen Streams Junction, Belmont Rail Junction, Tempe. We guinea-pigs thought something was wrong when at 1130 hours the aircraft would only just manage to stay up. An hour later, about 20 miles along the track, the inversion was stuck at around 9,500 ft. Struggling in these most unusual S.A. conditions after some three hours the main bunch got to Fourteen Streams. The second leg started the



L. to R.:
Debbie Dommisse,
Tim Biggs,
Hugh Keartland
and
Bobby Clifford.

same, frustrated, harrassed and jaded voices over the radio, bunched aircraft, and hot ships clinging with the rest. No, it wasn't fun over that kind of country 2,000 ft. above the ground. Several, including myself, were for chickening out and doing a mass "Hara Kiri" on Kimberley Airport but you can never really be sure of a 100% closed shop with glider pilots; there could be a blackleg, going it alone and making the rest ashamed—so we put afternoon tea and cakes firmly out of our minds and crawled on.

Then the incredible happened, things perked up, maybe the mine, the largest man-made hole on earth, was the cause, anyway, altimeters started to move positively to 12,000 ft. and everyone was duelling again. 20 miles further on at the Modder River with a 20-kt. headwind we were all back to the lost cause, except now there was no haven within easy reach; time was beginning to run short, too. However, people started to round Belmont and they then had initially the benefit of a 15-kt. wind in their favour. Some souls unfortunately sang their swan songs. Bryan Stevens in the Austria reported landing just short of Belmont; where he imagined he could get down I don't know. Peter Rousseau in the Phoebus 15 I saw sitting in an onion patch of not more than two acres, the only place possible to land for miles.

The Schweizer went gracefully round Belmont but not very high — 10,500 ft. Now we were hanging on to everything, drifting eventually past Koffiefontein; not a hope, of course, of making the 80-odd miles back to Tempe at such a late hour. The sun was just above the horizon as we broke off from the final glide at 800 ft. above ground, with Petrusburg visible a few miles further on, and gently came to rest within 30 yards of an Afrikaner couple sundowning on their house verandah. I think it made their day, and we certainly couldn't have picked a more hospitable family to gate-crash. With 5 other sailplanes in the immediate vicinity, the poor woman manning the telephone switchboard in Petrusburg was having a whale of a time, mainly from the locals ringing each other up to gossip. Do you wonder that the last task next day was a modest 100-km. triangle and a Press Gang had to be formed to coerce 10 pilots into flying. After 54 hours' gliding and 1,800 cross-country miles in 12 days I was strictly for convalescing!

And so another truly wonderful South African Competition came to an end. Something like 70,000 kilometres had been flown by 23 sailplanes during those 15 days—and a task every day. A truly remarkable performance.

The competitors' thanks and admiration for the standard of organisation go to a mere handful of people, Wesley and Gay Shields, Mandy Human, Debbie Dommisse and Glenn Freeman, who did so much to make the occasion such a success. We are also indebted to the staff of St. Andrew's School for staying on during the Summer Break; they so ably fed, accommodated and tolerated such a cosmopolitan gathering.

Finally, a personal thank you to my many friends in the Republic and outside for such happy memories, both on the ground and in the air to sustain me during the rest of the U.K. winter. Particularly my gratitude goes to Hugh Keartland for his generosity in the loan of a two-seater, a trailer, a Mercédès, and Philipman, his very able Bantu chauffeur.

AIR LEAGUE RALLY

THE Air League has sponsored the holding of a Rally, to be called the "Flying for Fun" Rally, and to be held at Sywell Aerodrome, Northampton, on 13th/14th September. There will be static displays as well as demonstrations of gliders and light aeroplanes and model aircraft. The aim is to encourage air-mindedness and inexpensive flying of light aircraft. Powered aircraft are to be limited to 105 h.p. engines, except for veteran or vintage aeroplanes, which might be included in the static aircraft display.

The BGA is helping with the organisation of the event in conjunction with the Coventry Gliding Club, whose site at Husbands Bosworth is not far away. Members of other clubs who would like to assist in demonstrating to school parties and teachers the economics of glider flying are cordially invited to send in their names.

CORRESPONDENCE

THE PROBLEM OF THERMALS

Dear Sir,

I was particularly interested to read Peter Goldney's article on thermals in your December issue as the London Balloon Club has recently been given a grant from the R-38 Memorial Fund to carry out some practical investigations into the problems (that's the word for airships and balloons!) associated with vertical air currents at low altitudes. We are planning a very full flying programme in 1969 and hope to make some discoveries that will be useful to cross-country glider pilots as well as balloonists.

So far, we know that on a July day last year there was one thermal over a Buckinghamshire cornfield that rotated clockwise and had a diameter of at least 100 yards between 50 and 400 feet above ground. One point of interest is that the balloon continued its clockwise spiral motion when it moved out of the thermal and descended—uncomfortably quickly—to corn-top height.

We should be delighted to hear from any of your readers who are inquisitive about the structure and sources of thermals and can give us any unpublished information about them.

London Balloon Club, Tring Road, Dunstable. ROGER Q. BARRETT

[If correspondents report the direction of rotation of a thermal, dust devil or balloon, will they please state if it is clockwise (or anti-clockwise) as seen from above (as in this letter) or from below.—ED.]

VINTAGE GLIDER RALLY

Dear Sir,

I would like to suggest for the coming season, a "Vintage and Veteran" glider rally. Each year the number of old and famous types in flying condition becomes less. Very soon it will be impossible to hold such an event as proposed.

Therefore, any club or private owner interested who consider they have a suitable machine, and would like a weekend flying in similar company, please contact me as soon as possible.

Jack Harrison, CFI East Midlands Club, has kindly offered the use of the club's facilities, including the bar, and the site, which is large, smooth and flat.

Adequate hangar space for rigged aircraft has been arranged and a party is also on the list. Launching will be by winch and auto-tow. I will arrange for aero-tows if there is sufficient demand.

11 *Paddock Close,* C. A. HAYES
Radcliffe-on-Trent, Nottingham.

TOST WINCH

Dear Sir,

The Derbyshire and Lancashire Club Notes in the Dec.-Jan., 1969, S. & G. contain a sentence that has caused concern in several quarters. They said, "Our German Tost winch broke down yet again, and has been out of use for a month now, spitting oil everywhere."

Last week I had the pleasure of meeting Herr Tost to examine his new "O4" winch under construction. I suspect that your author would have been as embarrassed as I was when he mentioned these notes.

From your description of spitting oil it does seem possible that your trouble is not in a piece of Tost machinery—could it have been your engine? Possibly it was not entirely generous to mention the name without specifying the fault, but Herr Tost has authorised me to invite you to write to him in case he can help you to rectify matters. His business has, for the last 20 years, been manufacturing and marketing successful glider winches. He would like an opportunity to number you amongst his most satisfied customers. His interest is exactly yours—to get your fleet

airborne—do please drop him a line of explanation. I can assure you that you will get courteous and prompt advice, in English, from this very busy man whom I can best describe as cast in the genuine Philip Wills mould.

When your difficulty has been overcome might I ask you to include it again in your Club Notes in S. & G., as the magazine really is read in all corners of the gliding world.

BFPO 40 DONALD SCARFE

AIRFIELD SAFETY

Dear Sir,

I would like to say a few words about airfield safety, not from the flying point of view, but from the mechanical aspect of operations—tractors, winches, etc.

How many of us realise that the tractor driver could slip when he is reversing to take the tension off the cables as we unhook them? Have you ever walked up to the tractor driver without taking the precaution of checking that he's in neutral? Another favourite is untangling the cable of the winch drum after a snarl up. What would happen if an overkeen novice towed the parachute end back to the launch end without proper checking? We all say that it couldn't happen to us; well, it does —a couple of months in hospital proved it.

Wellingborough, Northants. J. D. BENOISS

THE PHOEBUS

Dear Sir,

I recently spent some time at the Bölkow factory and had the opportunity to discuss with Rudi Lindner the comments made by George Moffat in his article The Standard Elfe S-3 (October-November *S. & G.*). He pointed out that it was not really fair to compare his ship in climb as it was the prototype and weighed some 60 lb. more than the production Phoebuses. In addition the wing on the prototype was mounted on the fuselage at a higher angle of attack, causing additional drag at high speed.

Lessons learned at the factory also indicate that the c.g. placement toward the aft limit does improve climbing and speed performance and, providing the aft limit is not exceeded, is in no way dangerous in regard to stall or spin recovery.

Moffat's comments on separation sensitivity in regard to the airfoil of the Phoebus are not exactly correct—the profile does have an extremely high percentage of laminar flow and, once this flow is detached by flying too slowly, it does not reattach until the speed is picked up a few knots. Therefore, when maximum performance is needed Rudi suggests that the glider be flown just a bit faster than would be indicated. This will preclude separation and the necessity of having to pick up even additional speed in order to have the airflow reattach.

With reference to the article by Peter Hearne (December-January issue, *S. & G.*), there are some slight errors, which I believe should be corrected for your readers.

The first appears on page 476 in his discussion of the thickness of the balsa core. I'm afraid a good engineer would view a 1/16th thick sandwich as being a

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bit too thin for safety! The Bölkow Repair Manual states that balsa will be 5 mm in thickness for surface shells being end web, aileron, root transitions to fuselage shell, rudder, horizontal tail unit and that all other shell thickness shall be 7 mm. This is considerably thicker than the 1/16th inch mentioned in the article.

At the bottom of page 475 Mr. Hearne uses "liberal" in his discussion of the resin used. This is contrary to practice at the factory. To the uninitiated, the amount of resin appears quite small—the cloth is wet, but all excess epoxy is removed by a rubber scraper so that the cloth actually bonds directly to the balsa without any excess resin at the line between glass and balsa. Care is taken to insure that the balsa is thoroughly wetted by the resin before joining to the glass, but it is quite surprising how "dry" the entire process appears to the uneducated eye.

On page 478 under Repairs, the 1:4 angle mentioned is also incorrect. The Repair Manual states that balsa should be spliced 1:10 and the laminate shall be spliced at a 1:40 angle. Also, a complete discussion of the repair process should mention that too much thickness or stiffness in a repaired joint is fully as bad as an improper splice angle. This is particularly true in flexible areas where too much stiffness at a repaired point greatly increases the stresses around the stiff portion and can cause failure.

Finally, I agree with Mr. Hearne that the repairs are simple and rather easy to execute, particularly if one does not mind sticky fingers! However, they must be done carefully and properly in accord with the manual which is supplied with every Bölkow sailplane. The Phoebus is doing extremely well in competition throughout the world under both weak and strong conditions. It's a very fine sailplane but, like all machines, does have idiosyncracies which must be understood by the pilot if maximum performance is desired.

Phoenix, Arizona JOHN D. RYAN

RELIGHTS

Dear Sir,

As more gliders compete in competitions each year, may I suggest that the policy of allowing relights from away landings should be reviewed. There are three reasons for suggesting this:

(1) Public Relations.—Anyone who has witnessed the Calgary atmosphere of departing trailers with crews anxious to ensure a quick retrieve if necessary, will know the effect on other road-users. Those trailers returning for relights heighten the effect.

(2) Landowner Relations.—When every field landing puts our relations with landowners at risk, should we not try and do something positive now to lessen this risk? Landowners in the areas near site are those most likely to be inconvenienced by gliders in fields. The risk this entails must surely be increased by crews under pressure owing to a relight retrieve.

(3) Flight Safety.—Rapid derigging in a field followed by equally rapid rigging at the launch site are hardly conducive to safety. It is a calm pilot indeed who can honestly say on these occasions that he has completed all checks and is fully briefed for take-off.

Stroud, Glos. RAY MARSHALL

POWERED GLIDING

Dear Sir,

May I support Gerry Burgess's letter in the December-January *S. & G.*? This motor gliding thing is in danger of getting a bit out of proportion.

It is claimed by some that it will bring in a new era; and certainly it will. In so doing it will change, in part, the appeal of the sport. I'm not thinking here of the attraction of the grace and simplicity of the sailplanes themselves, but more of social appeal of a joint effort.

The competition man is, by definition, one on his own. There are the many "club" men who get their satisfaction from the comradeship of the joint effort of launching and some flying. Where but in a gliding club could you satisfy the minor

ambitions to drive a double-decker bus as an amateur? The more zany these trappings, the better the membership respond.

We have read from time to time letters of impatience at the delay in getting a launch. I can well understand the frustration of the ambitious beginner; I shared it myself. But the answer to super-saturation is to start another club. The movement is expanding at some 15 per cent per annum. Nor should it be forgotten that any situation exists because the majority members of the club are not really willing to make the effort to change it. The enthusiastic make their own arrangements.

The motor glider self-launcher will come into use in larger clubs where there is a need to employ permanent staff's time as efficiently as possible; with it comes the five-day week and all the trappings of the predictable "situation".

The smaller clubs won't attach the same importance to the powered glider; having no salaried staffs, they look upon first cost as most important. For them the motor glider is for the slightly odd chap—a private owner who always takes off cross-wind.

Let motor gliders come in the right way and in due course. Keep them out of sailplane competitions, for the presence of a power plant will always be at the back of the minds of the competitors that haven't one. There is fertile ground for suspicion and doubt in a mixed competition. This would not be good for the movement as a whole.

Collingham, Yorks. J. C. RIDDELL

2-1-0 SCORING

Dear Sir,

May I congratulate Jack Harrison on his proposed 2-1-0 system of scoring. This looks excellent, and simple enough for all pilots to keep track of their own scores, even in the heat of competition.

The only small modification I should propose would be in respect of ties for longer distance flights, say in excess of 350 km. In such cases 1% of the distance flown to the nearest whole km. might be fairer. The tie criterion on speed looks about right.

Most outsiders criticise the excessive complications of glider scoring. This idea is a great advance and deserves adoption. Not only from the point of view of the competing pilot but also in aid of public relations.

Let us see how it compares in 1969.

Chobham, Surrey. A. J. DEANE-DRUMMOND

FAI BADGES AND MOTOR GLIDERS

Dear Sir,

Since I have probably done as many powerless cross-country miles in a motor glider as any other person in this country, and have at this time just placed an order for an SF-27M motor glider, I feel that I cannot allow letters such as that from Godfrey Harwood (page 69, *S. & G.*, February-March) to go unchallenged.

Personally I believe that motor gliders should, within the confines of certain rules, be allowed to compete on equal terms with pure gliders for the purpose of obtaining FAI badges and for entering Regional and National Gliding Championships.

It appears from the large number of letters and articles published on this subject in past editions of *S. & G.* and elsewhere that the main objections to motor gliders are that, since they are fitted with an engine, this allows their pilot to fly at ever lower altitudes over towns, cities and mountain ranges in the complete knowledge that his engine will rescue him from all evils.

Let me try to squash this fallacy once and for all. Any person who is narrow-minded enough to think that an engine, however efficient or reliable, is guaranteed to start at a moment's notice, and who flies to this formula, is not going to be with us much longer.

In practice, particularly with retractable engined sailplanes, the decision to start one's engine must be taken at a far greater altitude than that at which a pure glider

pilot would have even tentatively selected a field, since if the motor did not start then he, too, would be faced with a landing in the same way as our purist.

In any case, as I mentioned earlier, rules could be contrived which covered all problems of apparent inequality. We have already got a barograph on sale commercially which registers "ignition on" time, and a fail safe electrical circuit which can be sealed in exactly the same way as a normal barograph. (See *S. & G.*, page 475, December-January, '66-'67.)

Thus engine restarts after being observed across a starting line, with engine stopped, and prior to eventual landing could be considered, and rightly so, to have invalidated that flight for competition or award purposes.

Obviously not all aspects of this matter have been covered in the above, but if FAI badges, etc., are not eventually awarded for motor glider flights, then I suppose, if I had the money, I could always go to Texas with my Diamant or Sigma and get my 500 km. Diamond there.

Staines, Middx. P. G. JEFFERS

LIGHTNING STRIKES

Dear Sir,

I have been requested to employ my knowledge and the knowledge of my friends to come up with some factual data on lightning strikes on sailplanes. If any pilot has data on lightning strikes I would appreciate a report that contains the following information:

1. Type of sailplane and its construction.
2. Location, altitude, meteorological conditions.
3. Electronic gear on board, if any.
4. Damage sustained, if any.
5. Pilot's comments.

Please send your data to: H. Marshall Claybourn, 322 Recoleta, Apt. P, San Antonio, Texas 78216, U.S.A.

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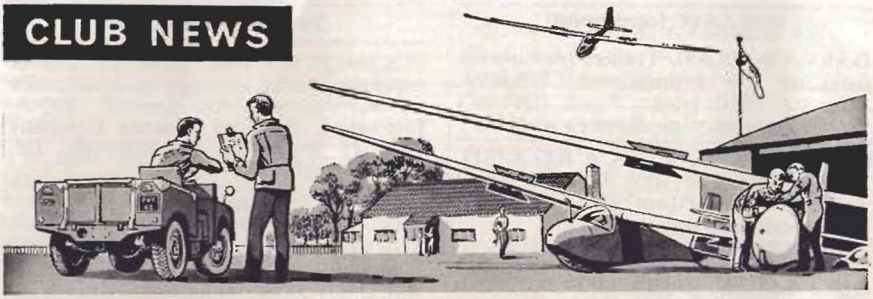
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CLUB NEWS



WITH some reports already of quite good wave and thermal soaring, clubs are poised for the spring.

Copy and photographs for inclusion in the June-July issue should reach me typed, double spaced on foolscap paper, not later than 16th April, and for the August-September issue, not later than 11th June. Please send news to me at 11 Great Spilmans, Dulwich, London, S.E.22.

17*th February*, 1969.

YVONNE BONHAM (MRS.),
Club News Editor

ALBATROSS

OUR latest acquisition, the Bergfalke 2, first flew in Great Britain at Lasham during the last week in August. Three of our members, Colin Scott, Ray Morecroft and Fred Sloggett, were on the Instructors' Course at that time, and they were joined by CFI Tony Edwards, and Terry Robinson, who played a key role in trailing the Bergfalke back from Germany.

Great interest was aroused when our rather unusual bird was rigged and lined up at the aero-tow launch point, and we were grateful for the assistance of Paul Minton, Bill Scull and Ted Hatch, who, despite heavy flying commitments with the Instructors' Course, found time to help our own CFI in evaluating the aircraft. Thanks to the facilities at Lasham, and a spell of really fine weather, a great deal of useful familiarisation flying was carried out before we brought the Bergfalke 2 down to the West Country.

Now, after six months of Club use, we can thoroughly recommend this aircraft type. Despite the limitations of its airbrakes (now improved on the Bergfalke 3), we have experienced no problems even on our limited site. It is highly soarable, with excellent visibility from both cockpits, and exceptionally easy to rig and de-rig — literally a 10 minute job, which is of prime importance to us at present. Our hangar project, which started with such enthusiasm, has ground to a halt, due to lack of finance. The funds earmarked for materials were absorbed in the purchase, C. of A. and insurance of the Bergfalke. A vicious circle, which must be repeated many times in many Clubs!

However, with three aircraft, our flying statistics slowly improve, and our tug-pilot, Bill Dyer, has once again joined a powered aircraft syndicate, so we look forward to regular aero-tows in the very near future. This will enable us to make use of the thermal activity which always develops just *outside* our circuit boundary on days when our ridge is inactive.

Our circuit bashing during the last few months has brought several of our pupils near to solo standard. Our youngest member, Ron Johns, qualified for his A and B early in January, and was thus justly rewarded for his regular attendance and conscientious efforts in Club activities.

F. C. S.

BATH AND WILTS

REGULAR readers may recall that last year I asked for pen-friends for a young lady member of a French glid-



The ridge used by the Albatross Gliding Club, near Hope Cove, Devon. (Photo by Barry Kingdon.)

ing club and had an overwhelming response from all corners of the globe.

I am sure you will be pleased to read that Dominique, the young lady concerned, was feted by French newspapers and television recently, when she became the youngest qualified woman pilot in France. I hope that some of the penfriends she obtained through the medium of this publication received similar letters of elation to that which she sent me. Her great enthusiasm for flying was very apparent.

This winter has been one of our worst as far as flying hours are concerned. The airfield itself has been like a swamp and the Ministry of Defence has insisted that we do not use the grass at all, but take-off and land on the runways.

Eric Hales has put his recently extended garage to good use on the club's behalf by working his way steadily through the fleet on C. of A. overhauls and general repairs. Eric's work for the club is much appreciated.

K. N. S.

BLACKPOOL

WE were pleased with our flying progress in 1968; launches up 20% and twice as many soaring flights, partly due to the plentiful thermals, but also due to having an extra machine available, John Gibson's Breguet Fauvette. We now have another Assistant Instructor. Terry Hogben, thanks to the training he has received with the Yorkshire Gliding Club. We have a waiting list for ab-initio pupils and it is only the T-21 that is over-busy; with three single-seaters we can accept solo pilots at any time.

Alec Lunn completed the four C. of A. overhauls in advance of the spring season, using his workshop at Blackpool Airport, and the ground equipment has seen much attention too. Our main winch engine developed a big-end knock soon after we had bought a spare V-8, but we had Jack Aked's portable winch to keep us going. The diesel engine and gearbox are installed in their chassis, and this looks like the basis of a major new two-drum winch.

The Christmas edition of our newsletter included a simple description of waves and how to use them; within a fortnight Ken Fixter took the hint, and worked the Olympia up to 4,000 feet from a winch launch. This was Saturday, 28th December, when the T-21 had three sessions in weak lift, and Ken had three short tussles before contacting properly.

K. E.

BRISTOL

SINCE the last Club News, much has happened at Nympsfield. Pete Etheridge has left us to enter into Civil Avia-

tion, we shall miss him on the field and in the bar. Ron Sandford has taken over from Pete as CFI, and Jeff McBroom is deputy CFI and Safety Officer. We wish them both good luck. In addition to this, Linda Harrison is the Course Secretary and Mike Ross the Membership Secretary.

This year has been unkind so far; rain and low cloud prevailing. The Diamant has returned to Switzerland for a repaint, as the paintwork came up in numerous bubbles.

There are twenty-two sailplanes operating from the Club, this includes the Club's fleet of two two-seaters and four single-seaters.

We shall be pleased to welcome visitors and aircraft to Nympsfield.

B. F. W.

CAMBRIDGE

MARSHALL'S airfield has been waterlogged for the last month, but we have taken advantage of the soft ground by burying electric cables and driving in trailer hitches. We now have enough spare hitches to accommodate the Diamants, when they return from hibernation. The Olympia 463 and Skylark 3 have been wave flying at Portmoak. Ian Pringle did best, by taking the Skylark to 10,000 ft.

Brian Warren has improved our meteorology with three excellent lectures. In the last, he played a recording of a shipping forecast, so that we could practise drawing "Metmaps".

Our plans for this summer include a fortnight's flying for members at the end of March, ten aero-tow courses, and two camps at the Mynd. Anthony Edwards is planning a bungee safari in April. As usual, a small party will be going to Zell-am-See, Austria, to fly in the mountains.

P. A. K.

DEVON AND SOMERSET

THIS must surely be a record winter for rainfall and no one would have been surprised to find the pundits prognosticating pontoons instead of skids as better aids for operating in liquid mud. For those of us who perform from grass sites quite a bit of experience of flying in heavy footwear has been experienced, not to mention the mud which has been transferred from soggy drogues to the handling surfaces of our erstwhile spotless fuselages. Subsequent snow and frozen ground have made things more manageable.

Since we now have two syndicate Ka-6E's in addition to the club model, great care by the log-keepers is needed in identifying take-offs and landings and it will apparently be necessary soon to insist on individual decoration to assist this process. The Capstan has continued its valiant role of trainer throughout the winter and there have been no weeks when flying has not taken place either on Thursday or at the week-end.

The main item of news concerns the new clubhouse, on which a great deal of work has been done under the auspices of the two Browns, Pat and Terry, augmented by some of the labour force prevented by weather conditions from working on the hangar and workshops. Not that the latter have not progressed, it is now possible to park the tractor and towing vehicles under cover and hang up drogue parachutes to dry

Social evenings in Honiton have been a great success, largely due to organisation by Chris Slade, thus proving that his manual labours on the site are matched by an equally competent administrative ability. The club management committee is fully employed not only with site improvement projects, but also the necessary decisions regarding summer courses, aircraft and vehicles, flying and safety procedures and finance.

A. E. R. H.

DORSET (Compton Abbas)

THIS is the first time the Dorset Flying Club has contributed to S & G, but we hope to do so regularly in the future. The Club is situated at Compton Abbas, about five miles south of Shaftesbury and is 805 feet above sea level.

The site is particularly good for ridge-soaring, due to the many hills which surround the airfield. It is possible to soar in NE, N, NW and W winds. When the wind is NE-NW, lenticulars have been worked to 7,000 ft. They have appeared several times already this year, but they have been too weak to be used. They should be better in March.

At the moment the fleet stands at Ka-13, Blanik, Ka-6CR, Olympia 403 and four tugs. There is also a possibility of getting another high-performance single-seater. The club operates seven days a week, with John Morris as CFI (gliding) and Ron Powell as a resident instructor. There is also a large power flying section, which indulges in night flying.

The Portsmouth Naval Gliding Club brought their Skylark 2 to Compton in January and it will remain here until March, so that their members have an opportunity to enjoy some ridge soaring and flying at a site not hampered by sea breezes.

As the Club is in full-time operation, private owners and any other visitors are more than welcome at any time. The Dorset Regionals are being held here from 12th-20th July and we wish all the competitors every success.

T. K. S.

ESSEX

OVER the past few weeks, North Weald has seen an energetic drive aimed at that old bug-bear — launch rate. John Critch chased us about the launch-point, packed us off to retrieve gliders from what must have been the muddiest part of the entire airfield, and generally made things hum. At the end of the day we had done slightly over the magic "ton". Not, perhaps, a record for some clubs, but far more than we're used to here.

Some compensation for our lack of speed in launching (not airspeed!) is the height we can obtain from our direct tow system. Elvin Hibbard has been experimenting with longer and yet longer lengths of piano wire and the problem of what to do when all that wire starts drifting in a cross-wind. Thanks to his efforts in training tow-car drivers, we now reckon that we can launch any of our aircraft to at least 1,500 ft. in any wind which permits us to use our main runway, and still have the parachute drop within a few yards of where we want it (well almost!). So, visiting pilots beware, that glider at 2,000 ft. might still have a length of wire hanging beneath it!

The first thermal of the year arrived on 25th January — Mike Throssell was playing with his new Skylark 4 and, after a launch to 1,600 ft. (a.g.l.) he started doing 360's. Assuming that he was either practising his turns or else trying to fool us, we chose to ignore him, until, some thirty minutes later, someone noticed that he was still airborne in what Mike later described as very weak stuff, which at no time took the Skylark any higher than 1,850 ft.

At the end of February a large contingent from the club headed for you-know-who's wave site up in the frozen North, bent on Gold and Diamond heights and a few Silver durations.

Finally, we would mention that our telephone number is North Weald 222, and not as shown in the BGA diary.

G. F. M.

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GLASGOW & STRATHCLYDE UNIVERSITIES

TO our regret, our CFI, Reg Curwen, left us in November to join a large neighbouring Club on a full-time basis. He departed with the Club's best wishes, having put in an enormous amount of work in our earliest days.

Flying restarted, however, on 16th February in glorious weather, under the guidance of our new CFI, Dean Carswell, and we look forward to another good season.

Apologies are offered for some delay in acknowledging the letters received from Clubs interested in Eric Kohn's idea of a Universities' Clubs' Federation or Association. Replies will be sent soon but it seems that University Clubs are of very varied strength and it may be that the idea will have to be shelved meantime.

W. S.



The Lakes Gliding Club's T-53, the first to be operated by a club in the UK.

KENT

FLYING during December and January has been rather spasmodic, although there was an encouraging increase of frequency during the latter part of January, assisted by a lot of mid-week flying. Such are the advantages of being a seven-day week club, especially in the winter.

Because of the waterlogged condition of many parts of the airfield, launching has been mainly restricted to aero-tows, which has made the absence of the two-drum winch, in for its winter overhaul, less noticeable. Any days where winch launches were preferable, i.e. ridge days, the single drum winch has coped adequately.

Already we have had a wee taste of thermals (on 17th January), plus some ridge days, and on 1st February Richard Pitman, in the Club Skylark 4, achieved 1969's first 60 km. out-and-return to Rochester, along the ridge.

We are all set for a busy season with our courses. On the ab-initio front we are running 27 consecutive courses, commencing on 6th April, and welcome back Glyn Richards to instruct, with Buzz Wilson. Because last year's nine-day Approved Instructors' Courses were so successful, we are having four more this year, two in March and two in October.

Our "At Home" is being held on 3rd and 4th May, working on the assumption, of course, that it cannot rain two days on the trot! This will consist of glider and power flying displays, parachute dropping and static displays, the whole basically aimed at showing the public what gliding is all about.

M. H.

LAKES

WAVE flying conditions have been found regularly over the last two months.

During December we suffered the tragic loss of Michael Dodd, when flying an Olympia. Mike set out to attain his Silver C gain of height and in fact reached nearly 8,000 feet before being forced to ditch the machine in the sea after contacting very strong sink.

At the Annual Dinner/Dance the Earl of Lonsdale Trophy went to Ron Hawkes, the Dodd Trophy to Roger Bull and the Leighton Hall Trophy to Peter Redshaw.

We have recently modified the club's Memorandum of Association, which dates back to 1933 and the days of the Furness Gliding Club, one of the oldest gliding clubs in the country. The Furness Gliding Proprietary was formed for "the construction of aerial conveyances of every description".

This summer we plan to run several courses at Walney for those wishing to visit the sunny north-west. Our Tutor remains "for sale", we await enquiries from interested clubs and/or museums. Apart from that, our fleet for 1969 consists of a T-21, T-53 and Skylark 3.

The T-53 depicted is finished in white,

with red wingtips and distinctive red flash along the fuselage.

P. E. G.

LEICESTERSHIRE

A NEWS sheet has not appeared from our Club for some time — we have all been hard at work at other jobs.

All this work started last spring, when Frank Crisp came in as Chairman with a brand new band of helpers, and has done a great and tremendous job, both on and off the field.

Ivan Vesty took over as CFI and between his sorties to Portmoak and Sutton Bank, has kept a keen eye on us all and even managed to run an instructors' course last autumn. Apart from the damp summer, we got in a fair number of cross-country miles, the main scorers being the Fitchett family, who appear to have great difficulty in getting their Cirrus down once airborne.

We have made some changes in our club fleet, and now have two T-49's to help cut down the long wait and the disappointments of our keen pupils. Thanks to a private member group, we also have the use of two tug aircraft.

So we seem to have got off to a good start, and look forward to the soaring season and are ready to welcome new members and, indeed, our friends who may care to visit us.

M. M.

LONDON

AFTER an unusual absence of westerly winds, the weather in January turned out more favourable than usual, and members were able to get in a good deal of flying. There was even some thermal soaring. The Club's Ka-13's and Ka-8's have continued to have a high utilisation, and we may acquire an additional one of each type later in the year. Our one Capstan is to find a new home in Africa, while the T-21's rarely fly now and are awaiting prospective buyers.

Negotiations are now in progress with the Board of Trade concerning the Luton Special Rules Zone, and other interested parties are presenting their views as well. Quite clearly we shall have to accept some reduction of freedom in the area, but it is hoped that the size of the new zone will not seriously affect our operations. We shall know where we stand by the early summer.

Apart from changes in the Club fleet and training policies, we shall be holding weekend competitions throughout the summer. These will be one-day contests, and open to both London members and visitors. At present, there is no fixed limit to numbers, but we may have to impose a lid if the scheme proves too popular.

Annual flying awards for last year went to Carr Withall for a 300 km. triangle, to Brian Davies for completing his Silver C, from scratch, in just over a year, and to Peter King for the furthest "Boomerang" flight.

M. P. G.

MIDLAND

THE early weeks of 1969 have not produced much flying, although there were two days on which reasonable wave conditions were encountered. Much snow has fallen on the Long Mynd and has encouraged our local varieties of winter sports.

Congratulations to Jane Randle, who has brought a national trophy to the club by winning the California in England Trophy for the longest flight by a woman pilot — 180 km.

We are to have a new winch for the coming season, which will be professionally built and modelled on the Roder winch, which has served us so well for twelve years. Alan Parkinson has supervised the project, and it is expected to be completed and in operation before Easter.

Included in our 1969 programme is a week in September which will be an open week. Not in any way a competition, but a week during which full facilities will be available for visiting pilots who wish to come and fly at the Mynd for fun.

Newly elected Committee member John Rickett was married on the 11th January — best wishes to you both for the future.

K. R. M.

NEWCASTLE AND TEESSIDE

BY the time this note is published it is hoped that the worst of the winter has passed us by, and that we are soar-

ing effortlessly in the heavens. However, back to earth the weather has not treated us too badly at Carlton. For those members who ventured forth, the days after Christmas gave them soaring sufficient to whet their appetite for more. The north ridge was working up to 7,000 ft., but it was cold; the Ka-13's occupants were, however, a few degrees warmer than those on the ground.

This time of the year produces for us low cloud, freezing temperatures, and few daylight hours, so we have been meeting in a local hostelry to hear, from those who know, all about the wonders of Air Traffic Control, Polar Curves, instrumentation and the like. These lectures have turned our experienced members into bookworms, but on the whole they have stimulated thought and discussion.

N. M. J.

NORFOLK

AFTER a very long silence, which was largely due to the uncertainty of our tenure at Tibenham, and even of our survival as a club, we are now in a position to feel some confidence in the future, sufficient even to warrant an entry in S. & G.

We are now on good terms with our farmer landlord; we were his only source of income from the airfield as a result of the disastrous harvest of 1968. "It's an ill wind . . ."

During the past year we have completely changed our clubhouse and bar in the old control tower. Previously it was a rat-infested, rather scruffy place, quite unsuitable for entertaining guests from other clubs. It is now comfortable, clean and attractive, largely owing to the efforts of various lady members and our indefatigable CFI Joe Podolski. During the autumn it was the scene of many enjoyable social functions.

We are now building a large hangar, which will house all our club and syndicate aircraft, with room for visiting aircraft also. At the time of writing the hangar is in skeleton form, but given two weeks of fine weather the job will be complete. All the construction work has been carried out by enthusiastic members, under the able leadership of Colin Shields, our technical officer. Our thanks to Bill Lawson and friends at Portmoak for the plan of their excellent trolley for use in the hangar.

We are very sorry to lose John Gaze as our Club Chairman. He is retiring after piloting us with great tact and success through a very difficult period in the Club's history. It is mainly due to his efforts that we have a good measure of security of tenure on the airfield. Thank you John! We shall look forward to seeing him frequently on the airfield to make full use of his "life membership".

Our fleet consists of a Ka-13, T-21, Swallow and Tutor and we have very active Skylark 4, Olympia and Ka-6 syndicates. We have had some good winter flying and we are looking forward to the soaring season and a good crop of Silvers and Golds — and, of course, some syndicate visits to other sites.

Doc Souper's flight from Tibenham to Newent, Glos., earned her the Club's trophy for the longest flight from the site in 1968.

We have to congratulate Joe Podolski on his Inspector's ticket and ourselves on the fact that C's. of A. now cost a little less than formerly.

We extend a warm welcome to members of other clubs who would like to brave the thermal-blank area of the Fens to visit us — we have first rate thermals at Tibenham. We are hoping to run some courses during the summer, when we shall function all week. Normally we fly on Thursday afternoons and weekends.

D. R. S.

NORTHUMBRIA

ON the 25th January the Pennine Wave was once again within reach of a winch launch, though on this day the system was unusual in that the wavelength of fifteen miles was double that which is normally seen. The position of the lift altered throughout the day and, as at the moment we haven't a tug to drop us off in the right area, it was largely a matter of the chance relationship whether one was forced earthwards with varios on the down stop or upwards over the cloud. There cannot be many clubs which offer the spectacle of a glider releasing the winch cable, then continuing on straight upwards. Dave Osborne recorded the maximum height of the day at 9,200 ft. in the club Jaskolka,

then for pecuniary reasons, and to let someone else have a go, he left one knot lift. David Pattison took over and climbed to 3,000 ft., gaining his C and first half of Bronze. The T-21B also yoyo-ed through the air, soaring to 6,700 ft., 6,400 ft. and 3,000 ft. as different instructors and pupils took the high road. Even the lowly Tutor made 3,000 ft. before a frozen Ray Robson returned to report 6 knots up at 3,000 ft. while flying at 50 knots.

Plans are well advanced for the syndicate-owned tug, and an all out effort is being made to have this further launching facility on the field when the hangar is completed in May-June. We feel that with aero-tows there will be a great opening up of our site, situated as we are 30 miles downwind of a textbook wave generator. Perhaps in the not too distant future we will be known as The English Wave Site.

J. R. G.

OXFORD

WE are extremely pleased to congratulate our illustrious Chairman, Malcolm Laurie, on his appointment as CBE, for the advancement of Forestry Technology throughout the world.

Peter Pratelli and Tony Taylor have successfully gained Instructor Ratings following two visits to Booker this winter, well done. The complement of Rated Instructors has now swelled to seven, with four up-and-coming members invited to receive instructor training.

Committee and clubroom discussion this winter has turned Malcolm's monetary gift into a new AS-K13. This aircraft will replace our venerable Olympia and will enable the new training policy to give more attention to the post solo pilot, hitherto a neglected butterfly. The Club will, unfortunately, lose one of its more enthusiastic members when Peter Brookes voyages to Cape Town this year.

The sound of an idling Hirth engine heralded the arrival of Peter Ross in his two-seat Motorfalke on a bitter but brilliant day in February. Several members were given the opportunity to sample this relatively new but inevitable training method.

Although 1968 did not produce the expected thermals the total launches showed an increase of 40% on previous years, due mainly to the introduction of our first AS-K13, some 2,300 launches logged by this aircraft alone, a new Club record. Another "first" that must be recalled is Stan Green's spectacular wave flight over the site earlier in the year, a new soaring condition we shall all watch for during the coming season.

C. J. T.

SCOTTISH

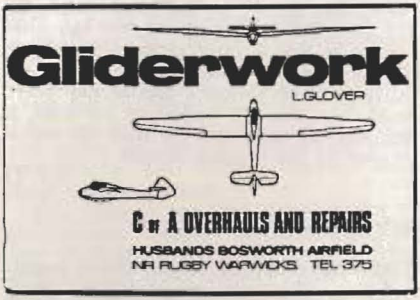
DEVELOPMENT of the site is beginning. The human and bovine occupants of Portmoak Farm have departed and the fences are being removed from the fields adjacent to the present launch points, which should help to ease the congestion that is sometimes evident. However, many hours of work over several years will be required before all the land can be used and we are able to offer BEA an alternative to Turnhouse!

After guiding the flying side for some three years, Ian Dandie relinquished the CFI-ship in November. Reg Curwen, who recently left the RAF after 29 years' service, has swapped his new bowler for a flying helmet to put his great experience to work as full-time CFI and Airfield Manager. Jim O'Donnell is his Deputy and Ansgar remains as Resident Instructor and Assistant CFI. A full-time winch driver will be starting shortly.

All this should enable better facilities to be offered to members and to more visitors, especially for mid-week flying. However, would-be visitors are asked to note that prior booking of accommodation is essential.

Because of their various difficulties, several groups are currently "lodging" at Portmoak. The Universities of Glasgow and Strathclyde G.C. from Strathaven (temporarily without a CFI), Edinburgh University G.C. from Cumbernauld and a Tipsy Nipper Syndicate from Dundee (evicted on the closure of Riverside). The latter green and yellow "bug" is available for hire by PPL holders.

We welcome to the Instructors' ranks Colin Golding, who has recently moved within reach of Portmoak from the south. Another new arrival is a very smart Super Cub, the property of our Chairman, Tom Docherty. It was incomplete on arrival but has now been fitted with that essential "extra" — a hook!



1969 began well, with wave on 1st January, and it has reappeared several times since. In spite of ground temperatures below zero, several hardy pilots have made climbs in the 12,000 ft. to 19,000 ft. range. The year's first Diamond has yet to come. One visiting Instructor found a new wave — in a SE wind — and climbed to 12,500 ft. in it.

Perhaps this year someone will manage to deprive one C. Ross of some of the Club silverware. He was presented with the Height and Championship awards — again — at an enjoyable Dinner/Dance in the Green Hotel, Kinross, on 7th February. The Distance award went to J. Rae and the Out-and-Return to Alistair Milne. By unanimous decision, the Service Salver went to Betty Barr, whose untiring efforts in the clubhouse throughout the year cannot be too highly praised.

Recent visitors have included Bill Scull (to whom we offer congratulations on his new appointment), Godfrey Harwood and Frank Irving.

Lastly, our congratulations and best wishes go to Mabel — M. B. R., our former columnist — on becoming Mrs. M. B. M. on Boxing Day.

R. A. S.

SOUTHDOWN

FROM comment in Club News it seems to have been a poor soaring year generally, so the statistics from Firle for 1968 may seem surprising. Our launches, at 5,000 or so, are about the same as in previous years but our total soaring, at 900 hours, is the best we've had. This, from a fleet of T-21, Ka-13, Tutor, Swallow, Olympia 460's and an Olympia 2B, would indicate that the site hasn't been sea-breezed so often this year. Our airfield on Firle Beacon, in the Sussex Downs, some five miles from the coast, is often de-thermalled by dead-sea air in this way. However, we are compensated by our north-east and north-west ridges, and these have, indeed, helped greatly this year.

It is a long while since we had a nor'-easter strong enough to bungey in, but a few weeks ago, a welcome combination of strong nor'wester and new diesel winch gave us unprecedented 2,000 foot launches. This somewhat mollified the crew of stalwart members who have wrestled our elephantine winch through a morass of glutinous Sussex chalk-mud on so many occasions.

The cost of our new clubhouse is generally agreed to be well worth the harassed look on our Treasurer's face. The facilities offered by this comfortable building are being well used by our members and the recently started series of monthly film shows is proving a popular attraction.

B. P. W.

SURREY AND HANTS

THE second half of 1968 was a great disappointment, after the promising beginning to the season. The Lasham competition produced only three days but raised Richard Brisbourne to 51st on the National Entry list. Richard also gained his Gold C height, as did David Pratt, on the Saturday before the September flood. A combined attack on 500 km. out-and-returns in July by Hugh Hilditch (SHK) and Chris Lovell (Club Dart 17R), produced 1,700 km. in six auto-tow launches in three days but no 500 kms.; the best being a 435 km. undeclared triangle by Hugh.

Chrises Garton and Day both achieved 300 km. goal flights, Garton's was an out-and-return to Leicester East, 320 km., in 4 hr. 40 mins. on 25th April in a Club Dart and Day's an out-and-return to Kidderminster, with an arrival back at Lasham at 7 feet agl. On Brennig James's 500 km. day, Club gliders did three 300 km. trips (one 345 km. triangle) all closed circuit, despite it being unsoarable locally until 1145 hr. George Vakkur, now in Texas, wandered off one afternoon in June for his Silver distance,

and did it from 11,000 ft. — his first attempt at cloud flying.

Surrey Club's annual invasion of Portmoak occurred, as usual, in October. Twenty members, with nine gliders and a Super Cub, waited for waves but were a bit disappointed. The first Monday took Chris Day to Gold C height and the second Thursday he went from 400 ft. to Diamond altitude. Frank Jacques landed on this day very despondent with an indicated gain of 16,300 ft. but the re-calibration of his barograph gave him 16,437 ft.

The fleet is changing a little for 1969. Faithful old Skylark 2B No. 148 is now in private hands sporting No. 347, and two Ka-8's have arrived. More hot-shippery is appearing among the private owners, including a Cirrus, belonging to Hilditch and partners.

Despite gloomy weather, a vast amount of cross-country flying was done last year. The statistics given in the February-March S. & G. were slightly inaccurate, Lasham aircraft flew 30,000 km., not miles, 11,000 km. of which were done in Surrey and Hants sailplanes.

C. L.

THAMES VALLEY

ONE of our two Skylark 3G's may need the wing tip modification, and we are hoping that, complete with oxygen and radio, it will be ready in time for the Portmoak expedition in March. Our Ka-13 will also be available for checking out and solo flying.

We have at long last been able to get some weekend flying; for several months running, due to rain and mist, the only thing to take the air was Dr. Brennig James's fibre-glass boomerang, trying for a 500 ft. out-and-return via Booker Tower.

Eric Giles recently purchased the Dunstable Skylark and has been busy improving the instrumentation and fitting a five channel VHF tranceiver; it should be "all systems go" for the Wycombe Regionals in August, which this year is extended to thirty entries.

Membership now stands at 150 and every week one or two newcomers arrive. We welcome Stephen Hope to the club, as an experienced instructor.

J. W.

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UPWARD BOUND

IN common with most clubs, we suppose, we have recently had enough snow, rain, floods and high winds to satisfy the members until 1975. For the first time in memory, even the higher parts of the airfield have been under water for long periods.

However, the Hon. Sec., mounted in the T-21, blundered into rising air on 26th January and spent nearly 20 minutes enjoying himself in it. At one time he saw a seagull circling a few hundred feet below and felt even more pleased about finding the rising air first.

1968 was a worthwhile year to us in terms of pupils going solo for the first time. We would like to mention staff stalwart Barry Goodyer, who went solo on the first flyable opportunity after his 16th birthday, and Robin Stafford Allen, who successfully completed his A and B in the autumn.

Ever since we bought our T-21 we have had to partially de-rig it in order to move it into the hangar. Now the hangar doors have been widened, with the consequence that operations can begin earlier and finish later each Sunday.

Another improvement to ground equipment has been effected with the replacement of the tractor starter motor (and elimination of the battery) by a Simms Motor Unit clockwork starter. Simply wound up by a handle, the unit easily copes with the engine starting problem and the elimination of the battery has cut out a major source of winter troubles.

On 1st February, the Upward Bound Annual Dinner Dance was held at the Swan Hotel, Thame, where, in 1941, the then recently created Glider Pilot Regiment had its officers' mess.

Before Christmas, the CFI and instructors at Haddenham were invited to a reception by the parent organisation of a group of ex-pupils and during the evening greatly enjoyed the world premiere of a 30 minute film, complete with Wagnerian background music, which portrays the usual Sunday activities of the Trust. Not the least amazing part of the film's production was the manner in which it was shot, without the least interference to routine flying operations.

V. W. J.

WESTCOTT

EARLY in January we held our Annual Dinner. It was a great success and all who attended thoroughly enjoyed themselves. During the evening the presentation of the Eric Robinson Trophy was made to Henry Eggleston for all the hard work he has put into the Club over the past year.

We have been fairly lucky with the weather so far this winter and steady progress is being made by our more hardy members. Trevor Stevenson and Alan Tanson have recently mastered the art of looping the Swallow, whilst one or two of the other solo pilots are still trying to pluck up the courage to "have a go" themselves.

In spite of all the difficulties with our new reverse tow pulley, we are looking forward to seeing it working in the very near future. Another welcome arrival will be a converted double-decker bus, which will serve as a control centre and restaurant. This should increase both the efficiency and social life of the club on the airfield.

E. A. C.

YORKSHIRE

BY the time this appears, the weather situation will surely have improved, but five of our members will never forget the night they arrived for our Champagne party on 28th December. They first met snow at Thirsk, but ploughed on, but had to leave their car in a drift some way from the clubhouse. They arrived on foot to find the party concelled and the CFI and Club Secretary hurriedly departing while they could.

The members spent a weekend marooned. Helicopter food supplies were being laid on for Sunday. when the roads were fortunately opened enough to let the Evans family and friends get back to Blackpool.

We've had some good westerlies lately and our ridge has been soarable.

Our courses start again soon, on the new principle of fewer courses with fewer people on them, consequently more staff and satisfaction all round. We hope to be getting a high performance glider to add to the Club fleet.

Those interested, please note that the Northern Regionals are to be held at

Sutton Bank this year from 16th-24th August. It will be Open Class with BGA ratings. Entry fee is £25, including ten aero-tows. The closing date is 31st March and entry forms and full details can be obtained from the Competition Secretary at the Club.

P. M.

SERVICE NEWS

BANNERDOWN

AFTER keeping company with motorised veterans in the museum for some time, we are now back in our own repainted hangar. Major, minors and C's. of A. are making good progress.

The evening ground instruction classes have continued successfully.

We held our AGM on the 17th January, when we learned that the 1968 "season" afforded us exactly 22 soaring days, which must be an all-time low. The new officers elected are: Chairman, Sqn. Ldr. B. L. Warsap; CFI, Capt. A. H. Whiffen; Secretary, SAC T. Carpenter.

Wing Commander K. F. Venn presented the Club trophies for 1968 as follows: Bannerdown Trophy, jointly to Geo. Pooley and Martin Jones; Colerne Cup, Pat Cleeve; Flight Safety Award, Phil Hutchings.

P. H.

FULMAR

OUR long absence from these columns does not denote inactivity on our part, but is a silent comment on the soaring conditions of 1968.

Over the Christmas leave period a prolonged north-westerly wind enabled us to soar Ben Aigan. Near blizzard conditions did not deter a hardy few from taking to the road with the winch and Swallow. A large field was put at our disposal by a benevolent farmer and we had three days of good soaring.

To provide more advanced training we reluctantly decided to replace our T-21 with a Capstan and John Kinch, John McKenna and Tony Wray did an out-and-return marathon to Lasham to collect Red Barrel. Our Skylark 3 is serviceable after nine months in dock and a new F100 tow truck is expected.

The Altitude Cup was presented to John McKenna, for a meritorious cloud climb to 8,000 ft. in the Prefect.

H. D.

WREKIN

CHANGES have taken place at Wrekin since our last report, the most important being the departure of our CFI, Norman Smith, whose place has been taken by Simon Morrison. Norman, who had been our CFI since 1967, has left both us and the RAF. Our very best wishes to him and to Sue.

The third birthday party of the Club was celebrated merrily on the 1st February and Harry Oxer organised a film show for us.

The bus is back on the field, providing hot coffee, soup and snacks, and for this we would like to thank Budge Burgess, who spent many weeks rebuilding the interior.

C. B. B.

CRUSADERS

CLUB members thoroughly enjoyed an "End of Year" dinner dance recently at the Curium Palace, Limassol, thanks to Max Mallinson's organisation and to the Curium staff and band.

Our Chairman, Lt. Col. E. S. Twiss, RE, welcomed the guests and presented the Club trophies. The "Andy Marshall" trophy, awarded to the member contributing most to the Club, went to Bill Dickson, for the second year running. Bill has since been posted to the UK.

The Club "Soaring Trophy", for the year's outstanding flight or progress, went to Gerry Cooper for his progress from C to Silver C and in obtaining Assistant Instructor Rating. Gerry and Mrs. Cooper were thanked for all their work for the Club.

Col. Twiss presented a small "bouquet" to Mrs. Sillett for putting up with the Swallow fuselage in her lounge for a month, while her husband, David, repaired it.

Tim Oulds, our CFI, reported that we had flown 943 hours in 1968, an 8% improvement over 1967.

M. I. O.

PHOENIX
(Brüggen, Germany)

NEWS from Phoenix has been non-existent for some time, and some committee changes have occurred recently. The newly-elected Chairman is Flt. Lt. Pete Lane. the CFI, Colin Elliot, the deputy CFI, Malcolm Medland and the Secretary, Fg. Off. Colin Browse.

Our last season was not so good, and the Club achieved only 3,600 launches. The weather, which started so well, was a large contributory factor. It was noticeable, however, that the bar profits for the year exceeded all previous records.

Our fleet now consists of two Swallows, one Ka-4 (two-seater), one Ka-6CR and we have a promise of a Ka-8B in early March, thanks to the generosity of Lord Nuffield, whose Trust has done so much for sports in general, but particularly for the gliding movement. We hope to supplement our one two-seater by the purchase of a Ka-7 or similar in the near future. Our Chairman's Libelle is awaited with eager anticipation. The launch control vehicle, pioneered by Malcolm Medland, is giving sterling service, and we have now disposed of the signalling bat in preference to the more efficient light signal.

Our retired Chairman, Sqn. Ldr. Mike Dawson, has earned the Club's gratitude for a job well done, and his interest in a sport in which he rarely had time to participate.

Finally, thank you Don and Jane Austin for your invaluable help during a period of low Club spirits. I am sure they will be appreciated at Swinderby.

C. R. E.

OVERSEAS NEWS



We would be pleased to receive news for this section from every country in the world where soaring is done—A. E. SLATER, *Overseas News Editor.*

AUSTRALIA

THE team selected for Marfa 1970 is: John Rowe and Malcolm Jinks in the Open Class, Max Howland and Maurice Bradney in the Standard Class; C. E. Wallington, Met Adviser; Tommy Thompson, Team Captain.

AUSTRIA

INNSBRUCK'S AMAZING WEEKEND.—In two days, 1st and 2nd November last, 128 Height Diamonds (gain of height 5,000 m. = 16,401 ft.) were earned in the foehn wave at Innsbruck. Over 100 trailers, from Germany, Italy, Holland and other parts of Austria, could be seen from the air converging on Innsbruck. The Innsbruckers themselves curbed their own height ambitions so as to devote themselves to getting their visitors airborne.

A Low over Biscay with a High over Russia produced foehn winds of up to 130 km/hr. on the first day, when 106 sailplanes made 115 flights; 5,000 m. was reached 44 times and 3,000 m. another 26 times. On the second day, 117 sailplanes made 148 flights; 5,000 m. was reached 84 times and 3,000 m. another 30 times. A pair of two-drum winches launched 30-40 machines an hour. Hellmut Eichmann from Hamburg acted as flight marshal, and the Innsbruckers looked after everything else, sitting up late into the night to process all the barograph records. There were three

crashes during the two days, one of them unfortunately fatal.

During the whole foehn season, Innsbruck has sold 1,600 beds for the night, 3,000 main meals, and 7,500 litres of petrol (1,650 galls) for the motorless fliers.

Aerokurier.

IRELAND (Dublin)

MEMBERS turned out in force for our Annual General Meeting in mid-December and elected K. Mellor chairman, C. Curley secretary, G. Connolly CFI, T. Granville deputy CFI, P. Bradley treasurer, and J. Hegarty ground marshal. Members also had many expansionist plans to consider, auguring well for the future of gliding in the Republic.

The club had a most enjoyable party at Dublin Airport after Christmas. When we wined, dined and danced, the trophies were presented to Stanley Dunne (Slazenger Trophy and Michael Harty Memorial Cup) and Michael Slazenger (Dennis Greene Trophy). CFI Gerry Connolly announced that he was presenting a new cup, the CFI's Cup, to be competed for by pilots up to Silver C standard.

Our new K-13 is on the field and flying. Solo pilots have been queuing with ab-initios to have a go, and the unanimous concensus is that we have made a really good purchase.

We have big plans for fund raising, but more of this later. Meanwhile, club members continue their hard work on the major overhaul of our K-7 and work proceeds on the newly-acquired premises in downtown Dublin which we hope to use for film shows, lectures and get-togethers. CFI Gerry Connolly and his deputy, Tom Granville, Irish Gliding Association chairman, Stanley Dunne, and Michael Slazenger recently flew to Long Kesh to visit the Ulster & Shorts Club, and Gordon Mackie kindly placed his SF-27M at their disposal. We hope this is a portent of things to come.

SOVIET UNION

HOW TO BREAK RECORDS.—The Russians have for some time thought that the way to break records was to train groups of pilots to assault them *en*

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masse. The Moscow Club formed a "Record Group" about three years ago. That this group was successful was evident from the fact that, in three seasons, they broke 11 National and 2 World records. 6 National and 1 World record being broken in 1967, when the pilots reached the Asov Sea. During that year's training period for the National Team, an attempt was made for the first time to storm the "Royal 500" (the Russian name for the 500-km. triangle). Yevgeny Rudyensky, in an A-15, set up the first National record for the 500-km. triangle during this attempt.

The same year we at Orel decided to try the same thing, to organise group flights with the object of beating the Royal Triangle record. The first attempt was in 1967, during the National Contests. Six teams started, three of them from other clubs. After 9 hours I had covered 420 km. Toroschchenko and Zagainov landed 20 km. behind me. We felt that the flight should have been possible, even in Blaniks.

During the winter, we thought it over and planned. In the spring, some excellent training was had, often under cloudless skies and in strong winds. Each member of the group flew between 1,500 and 2,000 km. across country and went two or three times round 300-km. triangles in good times.

WORLD 500-KM TRIANGLE RECORD

At Orel we have excellent co-operation with the Met. Office. On 28th May they told us that, on the next day, Orel would be at the centre of an anticyclone and that there would be good possibilities for a closed circuit flight. On the 29th it was clearly "on". We selected as turning points, Archangelskoe (Yeltsa region) and Korovino (Kursk region). Each pilot chose which machine they wished to fly. A. Kolacheva and V. Zagainov were to fly A-15's and the four others chose Blaniks.

Ada Klebnikova brought us the latest weather information. She expected 5/8 cumulus along the course, a low condensation level of 1,500 m. and temperature gradient of 0.7°-0.8° per 100 m. I got off after three others at 9.55 a.m. There had already been good cumuli for half an hour. I had as passenger a young sportsman from the Machine Technical Institute, Genia Kretov. I released at 700 m., climbed at 1½ m/sec. and was last across the line. Smoke was rising on course and, climbing at 3-4 m/sec. I could not have asked for better conditions. We started racing and as my machine had only an old defective P.106 radio, it was nearly impossible to stay with the others. We hoped that we would be observed over the turning points. We seemed "alone in the boundless ocean" as I observed bitterly to my companion. We stopped only for 3-4 m/sec. lift, flew between thermals at 120-130 km/hr., and we did occasionally see the others. On the second leg, there was a cross-wind of 10-15 km/hr. Greatest height was 1,700 m. Lowest height 800 m. Arrival time approximately 17.30 hrs. About 6-8 km. before the finish, we saw another Blanik to the left and a little higher than we were.

On landing, we met Valery and Tamara Zagainov. A World and two National records had been set up round the 516-km. triangle. Then Luisa Korovino and Genia Schwartz finished. Excellent! Four records. They had flown the whole way together. Valery Zagainov averaged 80 km/hr. round the triangle in the A-15, breaking Rudyensky's National record. Tamara Zagainova and passenger had broken the World two-seater record for women round the Royal Triangle by averaging 69 km/hr. But, best of all, Luisa Korovina had broken the women's single-seater record for the triangle with 63 km/hr. solo in a Blanik. She was the youngest participant and sat in a glider for the first time only three years ago.

WORLD OUT-AND-RETURN RECORD

On 6th June five machines again set out from Orel. V. Zagainov and Borodyanets flew two-seaters. T. Zagainova, Schwartz and myself flew A-15's. The women elected to turn at Tomarovka and the men at Oktyabrskoe, the distances to the goals and back being respectively 490 km. and 548 km. After the launch, each pilot set off but, after an hour, three A-15's were circling under the same cloud, climbing to 2,000 m. In the region of Kursk, clouds became rare, and near Oboyan there were no more at all. However, we continued to often meet 3 and even 4-m. thermals. All four gliders were observed over the turning point, and during the return, I saw

Zagainov's Blanik. Near Oboyan, the good cumuli started again. After crossing the finish the first to congratulate me was Tamara. Then Genia Schwartz arrived. The others had had to land out. Nevertheless, on this day, we had managed to break two more National records.

A. KOVAL.

Translated and condensed from "Krilya Rodiny" by C. WILLS.

UNITED STATES

THE Nationals, which will be a dress rehearsal for 1970, will be held at Marfa from 24th June to 3rd July; 20 foreign entries will be accepted. Entry fee for 1969 is $100.

VIETNAM

PETER RIEDEL, the German soaring pioneer, whose job with Pan American Airways has enabled him to report soaring possibilities in many parts of the world, was recently at Phu Cat in Vietnam. He writes in *Der Flieger :*

"Each day I looked inquiringly at a mountain group which I had dubbed 'The Wasserkuppe of Vietnam' because of its bright green slopes facing SW and rising steeply from the flat, broad valley to a summit at 2,920 feet, called Nui Ba. Why should we need a mountain in these modern times? Meteorological conditions in Vietnam are unlike those in most countries where soaring is done. In this country there are almost continuous relatively strong winds.

"In winter the NE monsoon blows powerfully from the neighbouring China Sea, whipping sand off the dunes. This wind blows even more strongly by day than by night, and then wave clouds can often be seen high in the sky above every mountain group in sight. As the day goes on, convection clouds shoot up, and soon the whole sky is an Eldorado for a soaring pilot. Slope-soaring could begin practically at sea level because, in addition to the mountains, many other ridges along the east coast of Vietnam descend straight into the China Sea. By winching up from the shore and casting off at minimum height, a gain-of-height record in the waves might be possible. Also the Vietnam mountains offer slope-soaring in practically every wind direction.

"In summer the wind direction is changed round 180° by the SW monsoon. Whereas the NE monsoon is very dry, coming originally from the Chinese continent with only a short sea passage, the SW monsoon comes from tropical latitudes and is warm and humid. With this meteorological set-up I expected a long period of weather unfavourable for soaring. In Miami, Florida, for instance, the clouds in summer are at the most 1,200 m. (4,000 ft.) high — often much lower, and the relative humidity is very high—often 95%. There the upcurrents are weak even when cumulus covers the whole sky.

"What a surprise! The SW monsoon brought nothing like such a high humidity. Often it was only 50-60%, and, with that, lovely cumulus clouds formed with bases far above 2,000 m. (6,600 ft.). And the SW monsoon blew and blew with tireless energy. Cloud streets formed over the whole sky and noticeably often along the same route. Thus on two occasions in the SW monsoon I observed the same street drawing away from the Vietnam Wasserkuppe, nearly putting it all in shadow. From there it passed only about a kilometre south of the summit of Nui Ba.

"Also in the SW monsoon, wave clouds have hung stationary above the hurrying cumulus, with their sharply-defined windward borders, and often with one or two secondary waves to leeward. What possibilities would not a soaring pilot have here at his disposal!

"However, distance flights down wind would not be possible because the SW monsoon blows away across the China Sea. But with a partial tail-wind, and making use of wave lift, a soaring flight could be made from south to north along the whole length of Vietnam, then continued far beyond its frontier to Laos or Cambodia and perhaps even to Thailand.

"But all this discussion is at present academic. Not only the war, but the economic poverty in these parts do not allow the 'luxury' of soaring. But the weather conditions are there and will remain till, perhaps one day, Vietnam will become a soaring pilot's Paradise."

Der Flieger.

WEST GERMANY

AKAFLIEG NEWS.—Akaflieg (University Academic Flying Group) Cologne has not been able to build the glass-fibre Horten tail-less sailplane "Colonia".

Akaflieg Berlin has been designing and building gliders of most unusual shapes, one of which was circular with a hole in the middle.

Akaflieg Munich are currently building the Mu-27, a single-seat sailplane of mixed construction. It is, I believe, to have a glass-fibre fuselage and wooden wings. This may be departing from the "Munich tradition" of steel tube fuselages. (News from a member.)

C. WILLS.

NATIONAL CHAMPIONSHIPS 1969.—This event will in future be held in alternate years; in World Championships years there will be only Regional Contests and the Junior Contest on the Wasserkuppe.

This year's Nationals will be held from 25th May to 7th June. Those entitled to take part are: the 17 members of the "National Team", the three winners in the previous Junior Contest, and, from the Regions, 7 each from Nordrhein-Westfalen, Rheinland-Pfalz, Hessen and Saar, 5 each from Bayern (Bavaria), Niedersachsen and Berlin, and 4 each from Baden-Württemberg, Schleswig-Holstein, Hamburg and Bremen. There will also be 3 places for the Air Force Sport Groups and 3 for foreign competitors. Each of the Regions will be allowed to include one motorised sailplane, making a possible total of 11. There will also be 3 places for new designs produced by German manufacturers, with the special privilege that alterations during the contest will not be reckoned as new designs. Also for the first time, Standard Class machines will be allowed to compete in the Open Class.

Motorised sailplanes will fly in the Standard Class, but if in future contests there are more than 10, a special Class will be created for them, and they might be allowed, e.g., to use the motor on one leg of a triangle, or for passing through a Control Zone.

The venue of the Championships has been subject to uncertainty, as each possible site has disadvantages. It has now been boiled down to a choice between Roth, near Nuremberg, or Aalen-Elchingen.

Aerokurier, Flug Revue.

WOLF HIRTH MEMORIAL RALLY.—25th July this year will mark the 10th anniversary of the death—while flying—of Wolf Hirth, the soaring pioneer. This year's international rally will take place on 26th and 27th July in the neighbourhood of his factory at Teck, near Stuttgart, organised by the Dettlingen-Teck Gliding Club.—*Der Adler.*

MOTORISED.—As at 30th September last, 122 motorised sailplanes were registered at the Federal Aviation Office, comprising 9 different types. The most numerous were 43 Motorspatz, the only two-seater. Of single-seaters there were 24 SF-24, 27 Fournier RF-4D, 13 each of the RF-3 and Ka-8B (8 h.p. only—others ranged from 20 to 40 h.p.), 8 Krähe IV, and one each of Ka-11 and SP-1.—*Luftsport.*

STATISTICS.—At a gliding conference in Berlin in November, statistics for 1967 were announced for the first time: 3,100 gliders made 800,000 flights totalling 265,000 hours, and cross-country flights added up to more than a million kilometres (621,000 miles). Badges: 800 Silver, 20 Gold C, 210 Diamonds.

—*Aerokurier*

4th INTERNATIONAL CONTEST at HAHNWEIDE.—Dates 9-18 May. Entrance fee DM 100 ($25 US). Closing date 31st March. Interested pilots should write forthwith to: Fliegergruppe W. Hirth, c/o H. Dietrich, Krebsstrasse 61, 7312 Kirchheim-Teck, West Germany. (Details from BGA.)

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